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[SEARCH](#)

Maintenance & Service Guide Presario Series Models: 1246, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)



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Welcome to the Maintenance & Service Guide (MSG). This online guide is designed to serve the needs of those whose job it is to repair Compaq products. The [Notice](#) contains the copyright and trademark information. The [Preface](#) shows symbol conventions,

Technician Notes, and Serial Number locations on the unit.

This MSG will be periodically maintained and updated online as needed.

For content comments or questions, contact the [Editor](#).

To report a technical problem, contact your Regional Support Center or IM Help Center.

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[SEARCH](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Notice

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Maintenance and Service Guide

Compaq Presario Series Portable Computer

First Edition (October 1999)
Compaq Computer Corporation

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[STORE](#) | [PRODUCTS](#) | [SERVICES](#) | [SUPPORT](#) | [CONTACT US](#) |
[SEARCH](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#) |


Preface


This *Maintenance and Service Guide* is a troubleshooting guide that can be used for reference when servicing Compaq Presario Series Portable Computers.


Compaq Computer Corporation reserves the right to make changes to the Compaq Presario Series Portable Computers without notice.

Symbols

The following words and symbols mark special messages throughout this guide.

 **WARNING:** Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or loss of life.

 **CAUTION:** Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of data.

 **IMPORTANT:** Text set off in this manner presents clarifying information or specific instructions.

NOTE: Text set off in this manner presents commentary, sidelights, or interesting points of information.

Technician Notes

WARNING: Only authorized technicians trained by Compaq should repair this equipment. All troubleshooting and repair procedures are detailed to allow only subassembly/module-level repair. Because of the complexity of the individual boards and subassemblies, the user should not attempt to make repairs at the component level or to make modifications to any printed circuit board. Improper repairs can create a safety hazard. Any indications of component replacement or printed circuit board modifications may void any warranty.

Serial Number

When requesting information or ordering spare parts, you should provide the computer serial number to Compaq. The serial number is located on the bottom of the computer.

Locating Additional Information

The following documentation is available to support this product:

- Compaq Presario Series Portable Computer documentation set
- *Introducing Windows 98 Guide*
- Service Training Guides
- Compaq Service Advisories and Bulletins
- *Compaq QuickFind*
- *Compaq Service Quick Reference Guide*

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[STORE](#) | [PRODUCTS](#) | [SERVICES](#) | [SUPPORT](#) | [CONTACT US](#) | [SEARCH](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Product Description

[Models and Features](#)

[Controls and Lights](#)

[Front Bezel Lights](#)

[Front Bezel Buttons](#)

[Left Side Components](#)

[Right Side Components](#)

[Bottom of Unit](#)

[Rear Connectors](#)

[Power Management for Windows 98](#)



The Compaq Presario Series Portable Computer is a continuation of the new generation of multimedia portable computers with an innovative and integrated design, outstanding audio and video, advanced core features, and attractive styling. This full-function, AMD-K6II-based portable computer allows full desktop

functionality.

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Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Troubleshooting

[Preliminary Steps](#)

[Clearing the Power-On Password](#)

[Power-On Self Test \(POST\)](#)

[Compaq Diagnostics](#)

[Diagnostic Error Codes](#)

[Troubleshooting Without Diagnostics](#)

[Solving Minor Problems](#)

[Contacting Compaq Support](#)

This section covers troubleshooting information for the Compaq Presario Series Portable Computers. The basic steps in troubleshooting include:

1. Follow the [Preliminary Steps](#).
2. Run the [Power-On Self-Test](#) (POST).
3. Follow the recommended actions described in the diagnostic tables, if you are unable to run POST or if POST displays an error message.

When following the recommended actions in the Sections on POST and [Diagnostic Error Codes](#) perform them in the order listed. Rerun POST after each recommended action until the problem is solved and no error message occurs. Once the problem is solved, do not complete the remaining recommended actions.

NOTE: If the problem is intermittent, check the computer several times to verify that the problem is solved.

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[STORE](#) | [PRODUCTS](#) | [SERVICES](#) | [SUPPORT](#) | [CONTACT US](#) | [SEARCH](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Illustrated Parts Catalog

[System Unit](#)

[Boards](#)

[Display
Assembly](#)

[Mass Storage
Devices](#)

[Miscellaneous
Cable Kit](#)

[Miscellaneous
Hardware Kit](#)

[Miscellaneous
Plastics Kit](#)

[Miscellaneous
Parts](#)

[Documentation
and Software](#)

This section provides a breakdown for, and identifies the spare parts ordering number associated with, each item(s) for the Compaq Presario Series Portable Computers.

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Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Removal and Replacement Procedures

This section explains the removal and replacement procedures for the computer.

Serial Number Location

Disassembly Sequence

[Electrostatic Discharge](#)

[Service Considerations](#)

[Cables and Connectors](#)

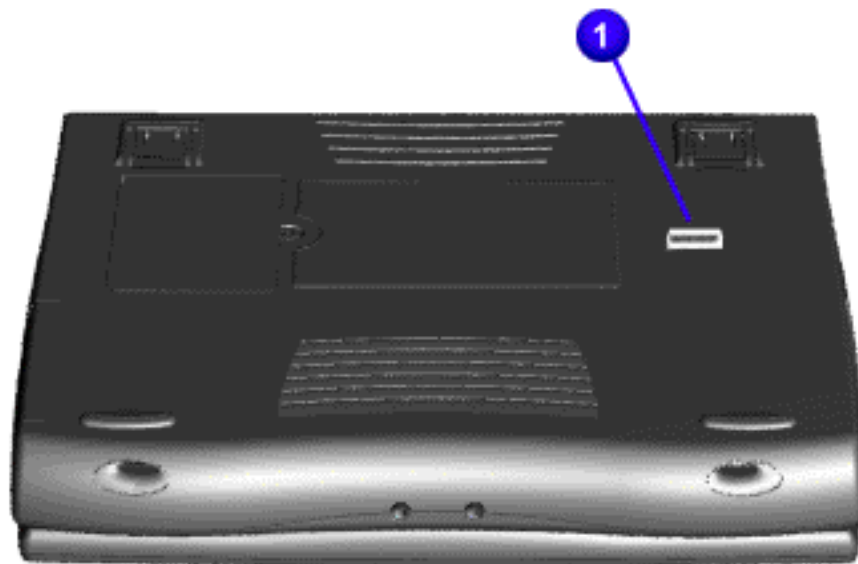
[Preparing the Computer for Disassembly](#)

[Battery Pack](#)

[Palmrest Cover with Touch Pad](#)

[Keyboard](#)

[Heatspreader](#)



Report the computer **1** serial number to Compaq when requesting information or ordering spare parts.

[Processor](#)

[Hard Drive](#)

[CD Drive](#)

[Battery
Charger Board](#)

[Modem](#)

[Display Panel
Assembly](#)

[Upper CPU
Cover](#)

[Speaker
Assembly](#)

[Diskette Drive](#)

[Fan Assembly](#)

[System Board](#)

[Dip Switch
Settings](#)

[Memory
Module](#)

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[privacy and legal statement](#)

Maintenance & Service Guide
Presario Series
Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Specifications

This chapter covers the following specifications of Compaq Presario Series Portable Computers:

- [Physical and environmental](#)
- [System Interrupts](#)
- [System DMA](#)
- [System I/O Address](#)
- [System Memory Catalog](#)
- [Display](#)
- [Memory expansion](#)
- [Diskette drive](#)
- [Hard drive](#)
- [CD drive](#)
- [Battery pack](#)
- [Modem](#)

Physical and Environmental

Computer Specifications	
U.S.	Metric

Dimensions		
<i>(models with 12.1" display)</i>		
Height	1.97 in	5.0 cm
Depth	12.20 in	31.3 cm
Width	10.12 in	25.7 cm
<i>(model 1277 with 13.0" display)</i>		
Height	1.97 in	5.0 cm
Depth	12.33	31.3 cm
Width	10.12	25.7
Weight		
Model 1246	7.19lbs	3260 g
Model 1247	7.19lbs	3260 g
Model 1277	7.19lbs	3260 g
Model 1278	7.19 lbs	3260 g
Model 1279	7.36 lbs	3340 g
Stand-Alone (Battery Pack) Power Requirements		
	NiMH	Li-ion
Nominal Operating Voltage	W @ 9.6 V	W @ 14.8 V
Maximum Operating Power	W @ 9.6 V	W @ 14.8 V
Peak Operating Power	W @ 9.6 V	W @ 14.8 V
AC Power Requirements		
Operating Voltage	100-240 V	
Operating Current	0.8/0.4 A RMS	
Operating Frequency	47-63 Hz	
Maximum Transient	Meets IEC 801-4 and IEC801-5 1kV for 50 ns	
Temperature		
Operating	41° to 95° F	5° to 35° C
Nonoperating	-4° to 140° F	-20° to 60° C
Relative Humidity (Non-condensing)		
Operating	10 to 90%	35° C to 90%
Nonoperating (tw = 38.7°C max)	5 to 95%	60° C to 95%
Altitude		
Operating	0 to 10,000 ft	0 to 3.15 km
Nonoperating	0 to 30,000 ft	0 to 10.14 km
Shock		
Operating	10 G, 11 ms, half sine	
Non operating	240 G, 2 ms, half sine	
Vibration		
Operating	0.55 G, 0.25 Oct/Min sweep rate	
Nonoperating	1.5 G, 0.25 Oct/Min sweep rate	

NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. Compaq Presario 1200 Series Portable Computers operate well within this range of temperatures.

System Interrupts

System Interrupts	
Hardware IRQ	System Function
IRQ0	System Timer
IRQ1	Standard 101/102-Key or Microsoft Natural Keyboard
IRQ2	Programmable interrupt controller
IRQ3	IRQ Holder for PCI Steering
IRQ3	ALi PCI to USB Open Host Controller
IRQ4	Communications Port (COM1)
IRQ5	IRQ Holder for PCI Steering
IRQ5	PCI Fast Ethernet DEC 21143 Based Adapter
IRQ5	ESS SOLO-1 PCI AudioDrive
IRQ5	IRQ Holder for PCI Steering
IRQ6	Standard Floppy Disk Controller
IRQ7	Printer Port (LPT1)
IRQ8	System CMOS / real-time clock
IRQ9	RAGE LT PRO AGP 2X (English)
IRQ9	IRQ Holder for PCI Steering
IRQ10	Texas Instruments PCI-1211 CardBus Controller
IRQ10	IRQ Holder for PCI Steering
IRQ10	Lucent 56K V.90 PCI DF Modem
IRQ12	Synaptics PS/2 TouchPad
IRQ13	Numeric data processor
IRQ14	ALi M5229 PCI Bus Master IDE Controller
IRQ14	Primary IDE controller (dual fifo)
IRQ15	ALi M5229 PCI Bus Master IDE Controller
IRQ15	Secondary IDE controller (dual fifo)

System DMA

System DMA	
Hardware DMA	System Function
0	(free)
1	ESS SOLO-1 DOS Emulation
2	Standard Floppy Disk Controller
3	(free)
4	Direct memory access controller
5	(free)

System I/O Address

System I/O Address	
I/O Address (Hex)	System Function (Shipping Configuration)
0000 - 000Fh	Direct memory access controller
0020h - 0021h	Programmable interrupt controller
0040h - 0043h	System timer
0060h - x0060h	Standard 101/102-Key or Microsoft Natural Keyboard
0061h - x0061h	System speaker
0064h - x0064h	Standard 101/102-Key or Microsoft Natural Keyboard
0070h - 0071h	System CMOS/real time clock
0080h - 0080h	Motherboard resources
0081h - 008Fh	Direct memory access controller
0092h - 0092h	Motherboard resources
00A0h - 00A1h	Programmable interrupt controller
00B1h - 00B3h	Motherboard Resources
00C0h - 00DFh	Direct memory access controller
00EAh - 00EBh	Motherboard resources
00F0h - 00FFh	Numeric data processor
0100h - 010Fh	Motherboard resources
0170h - 0177h	ALi M5229 PCI Bus Master IDE Controller
0170h - 0177h	Secondary IDE controller (dual fifo)
01F0h - 01F7h	ALi M5229 PCI Bus Master IDE Controller
0200h - 0203h	Gameport Joystick
0220h - 022Fh	ESS SOLO-1 DOS Emulation
0330h - 0331h	ESS SOLO-1 DOS Emulation
0376h - 0376h	Secondary IDE controller (dual fifo)
0376h - 0376h	ALi M5229 PCI Bus Master IDE Controller
0378h - 037Fh	Printer Port (Ltp1)
0388h - 038Bh	ESS SOLO-1 DOS Emulation
03B0h - 03BBh	RAGE LT PRO AGP 2X (English)
03C0h - 03DFh	RAGE LT PRO AGP 2X (English)
03F0h - 03F5h	Standard Floppy Disk Controller
03F6h - 03F6h	Primary IDE controller (dual fifo)
03F6h - 03F6h	ALi M5229 PCI Bus Master IDE Controller
03F7h - 03Fh7	Standard Floppy Disk Controller
03F8h - 03FFh	Communication Port (COM1)
040Bh - 040Bh	Motherboard Resources
040D0h - 04D1h	Motherboard Resources
04D6h - 04D6h	Motherboard Resources
0CF8h - 0CFFh	PCI Bus

1000h - 103Fh	Motherboard Resources
1040h - 105Fh	Motherboard Resources
1060h - 106Fh	ESS SOLO-1 PCI AudioDrive
1070h - 107Fh	ESS SOLO-1 PCI AudioDrive
1080h - 10FFh	PCI Fast Ethernet DEC 21143 Based Adapter
1400h - 14FFh	Lucent 56K V.90 PCI DF Modem
1800h - 183Fh	ESS SOLO-1 PCI AudioDrive
1840h - 1847h	Primary IDE controller (dual fifo)
1840h - 184Fh	ALi M5229 PCI Bus Master IDE Controller
1848h - 184Fh	Secondary IDE controller (dual fifo)
1850h - 1853h	ESS SOLO-1 PCI AudioDrive
1854h - 1857h	ESS SOLO-1 PCI AudioDrive
1858h - 185Fh	Lucent 56K V.90 PCI DF Modem
2000h - 2FFFh	PCI standard PCI-to-PCI bridge
2000h - 20FFh	RAGE LT PRO AGP 2X (English)

System Memory Catalog

System Memory Catalog	
Memory Address	System Function
00000000h - 0009FFFFh	System board extension for PnP BIOS
000A0000h - 000AFFFFh	RAGE LT PRO AGP 2X (English)
000B0000h - 000BFFFFh	RAGE LT PRO AGP 2X (English)
000C0000h - 000CBFFFh	RAGE LT PRO AGP 2X (English)
000DC000h - 000DFFFFh	Motherboard Resources
000E0000h - 000FFFFFFh	System board extension for PnP BIOS
00100000h - 01FFFFFFh	System board extension for PnP BIOS
0C000000h - 0C000FFFh	Texas Instruments PCI-1211 CardBus Controller
E0000000h - E3FFFFFFh	ALi M1541 AGP System Controller
FC000000h - FCFFFFFFh	ALi PCI to USB Open Host Controller
FC001000h - FC0010FFh	Lucent 56K V.90 PCI DF Modem
FC001400h - FC0017FFh	PCI Fast Ethernet DEC 21143 Based Adapter
FC100000h - FFFFFFFFh	PCI standard PCI-to-PCI bridge
FC100000h - FC100FFFh	RAGE LT PRO AGP 2X (English)

FC120000h - FC13FFFFh	RAGE LT PRO AGP 2X (English)
FD000000h - FDFFFFFFFh	RAGE LT PRO AGP 2X (English)
FFFC0000h - FFFFFFFFh	Motherboard Resources

Display

12.1" (Diagonal) HPA Display		
	U.S.	Metric
Active Area Height Width	9.56" 7.17"	245 mm 183.8 mm
Overall Dimensions Width Height Depth	7.9" 10.7" .31"	202.5 mm 275.0 mm 8.0 mm
Weight	18.2 oz.	520 g
Contrast Ratio	40:1	
Brightness	70 nits. Avg.	
Total Power Consumption	5.4 W (max)	

13.0" (Diagonal) HPA Display		
	U.S.	Metric
Active Area Height Width	10.39" 7.79"	263.98 mm 197.98 mm
Overall Dimensions Width Height Depth	11.6" 8.58" .31"	295.0 mm 218.0 mm 8.0 mm
Weight	20.3 oz.	580 g
Contrast Ratio	50:1	
Brightness	100 nits. Avg.	
Total Power Consumption	5.4 W (max)	

Memory Expansion

Base System Memory	Expansion Board Memory	Total Memory
32-MB	32-MB	64-MB
32-MB	64-MB	96-MB
32-MB	128-MB	160-MB
64-MB	32-MB	96-MB

64-MB	64-MB	128-MB
64-MB	128-MB	192-MB

Diskette Drive

Diskette Drive	
Diskette Size	3.5 in
Light	None
Height	.5" / 1.27 cm
Bytes per Sector:	512
Sectors per Track	
High Density	18 (1.44-MB) / 15 (1.2-MB)
Low Density	9
Tracks per Side	
High Density	80 (1.44-MB) / 80 (1.2-MB)
Low Density	80
Access Times	
Track-to-Track (high/low)	3 ms/6 ms
Average (ms)	94 ms/174 ms
Setting Time (ms)	15 ms
Latency Average	100
Number of Read/Write Heads	2

Hard Drive

Hard Drives		
	4.3-GB	4.8-GB
Capacity Per Drive	4.3-GB	4.3-GB
Drive Type	2.5"	2.5"
Logical Configuration		
Cylinders	8647	11648
Heads	6	4
Sectors per track	240-250	330 (max.)
Bytes per sector	512	512
Seek Times	2.5 ms	2.5 ms
(Typical, Including settling in ms)		
Single Track	---	5.5 max (read) 6.5 max (write)
Average Maximum	12	16 max (read) 17 max (write)
Full Stroke	---	30 max (read) 31 max (write)
Transfer Rate		
At interface	33.3 MB/s	33.3 MB/s
Sector Interleave	1:1	1:1
Buffer Size	512 KB	512 KB

CD Drive

CD Drive	
	24x CD Drive
Applicable Disk	CD-DA, CD-ROM, CD-ROM XA, CD-1, Photo CD (multisession), Video CD, CD-R, CD-Extra (CD+), CD-G, CD-RW
Center Hole Diameter	.6" / 15 mm
Disc Diameter	12 cm, 8 cm
Disc Thickness	1.2 mm
Track Pitch	1.6 um
Access Time (typical, including setting)	110 ms
Audio Output Level Line out Headphone	+/- 0.27 Vrms none
Cache Buffer	128 KB
Data Transfer Rate (typical, including setting)	3600 KB/s 150 KB/s 16.66 MB/sec
Startup Time	< 8 sec
Stop time	< 4 sec

Battery Pack

Battery Pack		
	Lithium Ion (Li ion)	Nickel Metal Hydride (NiMH)
Dimensions		
Height	.8 in (20.3 mm)	.8 in (20.3 mm)
Length	5.7 in (145 mm)	5.7 in (145 mm)
Width	3.1 in (78.7 mm)	3.1 in (78.7 mm)
Weight	0.90 lb (408.2 g)	1.01 lb (458.1 g)
Battery Pack Operating Time	3:00 hr	
Energy		
Voltage	14.8 V	9.6 V
Amp-hour capacity	3.0 Ah	4.5 Ah
Watt-hour capacity	44.4 Wh	43.2 Wh
Environmental Requirements		
Operating Temperature	32° F to 113° F (0° to 45° C)	32° F to 113° F (0° to 45° C)
Non-operating Temperature	-4° F to 140° F (-20° to 60° C)	-4° F to 140° F (-20° to 60° C)
Charging Temperature	40° F to 113° F (5° C to 45° C)	40° F to 113° F (5° C to 45° C)

Modem

Modem	
Compliance	ITU v.90~6 standard Full ITU-T V.34 compliance Full compliance with: V.21, V.22, V.22bis, V.23, V.32, V.32bis, Bell 103, Bell 212A
Data Compression	V.42bis/MNP 5
Fax Modulation	V. 17 V. 21 (Group III Compatible) V.29 V.27Ter
Command Set	Hayes AT Class 1 Fax
Cable	6 Ft. RJ-11 telephone cable

[Top of Page](#)

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[STORE](#) | [PRODUCTS](#) | [SERVICES](#) | [SUPPORT](#) | [CONTACT US](#) | [SEARCH](#)

Maintenance & Service Guide

Presario Series

Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Connector Pin Assignments

This section provides connector pin assignment tables for Compaq Presario Series Portable Computers.

For more information on connectors, refer to the section on [Rear Connectors](#).

NOTE: The signals in all tables of this appendix are considered active high unless otherwise indicated by an asterisk (*).


Parallel Connector



Pin	Signal	Pin	Signal
1	Strobe*	10	Acknowledge*
2	Data Bit 0	11	Busy
3	Data Bit 1	12	Paper Out
4	Data Bit 2	13	Select
5	Data Bit 3	14	Auto Linefeed*
6	Data Bit 4	15	Error*
7	Data Bit 5	16	Initialize Printer*

8	Data Bit 6	17	Select In*
9	Data Bit 7	18-25	Signal Ground
* = Active low			

Serial Connector

Connector	Pin	Signal
	1	Carrier Detect
	2	Receive Data
	3	Transmit Data
	4	Data Terminal Ready
	5	Signal Ground
	6	Data Set Ready
	7	Ready to Send
	8	Clear to Send
	9	Ring Indicator

Keyboard/Mouse

Connector	Pin	Signal
-----------	-----	--------



1	Data 1
2	Data 2
3	Ground
4	+5 V
5	Clock 1
6	Clock 2

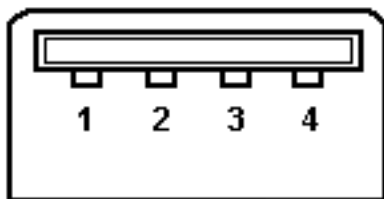
External VGA Monitor

Connector	Pin	Signal
	1	Red Analog
	2	Green Analog
	3	Blue Analog
	4	Not connected
	5	Ground
	6	Ground Analog
	7	Ground Analog
	8	Ground Analog
	9	Not connected
	10	Ground
	11	Monitor Detect
	12	DDC2B Data

13	Horizontal Sync
14	Vertical Sync
15	DDC2B Clock

Universal Serial Bus

Connector



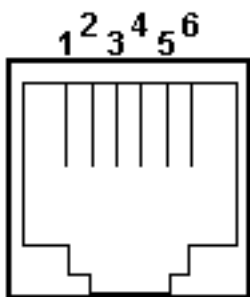
Pin

Signal

1	+5V
2	Data -
3	Data +
4	Ground

Modem

Connector



Pin

Signal

1	Unused
2	Unused
3	Tip
4	Ring
5	Unused
6	Unused

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Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Battery Pack Operations

This section covers the following information concerning battery pack operating time:

- [Increasing battery pack operating time](#)
- [Minimizing the energy required](#)
- [Maximizing the energy stored](#)
- [Conditioning a battery pack](#)
- [Disposing of a used battery pack](#)

Increasing Battery Pack Operating Time

Battery pack operating time differs depending on several variables. To avoid unnecessary replacement, consider the following variables when determining how long a charged battery pack should last:

- Power management settings
- Hardware configuration
- Software applications
- Installed options
- Display brightness
- Hard drive usage
- Changes in operating temperature
- Type and number of installed PC Cards

NOTE: The power consumption requirements for PC Cards vary widely. Some cards drain the battery pack very rapidly.

Battery pack operating time can be increased by as much as 50 percent by controlling the energy required by the computer and the energy stored in the battery pack.

Minimizing the Energy Required

To minimize the energy required by the computer, follow these steps:


- Set the power conservation levels in the Power Management utility to **Maximum**.
- Customize the timeout value to work more efficiently with the applications. The amount of battery life depends on the values selected.

Maximizing the Energy Stored

To maximize the energy stored in the battery pack, follow these guidelines:

- Condition the battery pack at least every 30 days to improve overall battery performance.
- Keep a battery pack in the computer when using it with AC power to supply the battery pack with a constant trickle charge.
- Store the battery pack in a cool, dry place when not in use.

Conditioning a Battery Pack

 **CAUTION:** To avoid a loss of data, ensure that all data is saved before discharging a battery pack.

To condition a battery pack, complete the following steps:

1. Plug in the AC adapter and allow the battery to charge until the LED light on the display stops blinking. Your battery gauge may read 100 percent for a period of time before LED light on the display stops blinking. Do not unplug the AC adapter until the arrow disappears.
2. Unplug the AC adapter and allow the battery to drain until the computer reaches hibernation and turns itself off. **Do not plug in the AC adapter during this process or you will need to restart with Step No. 1.** You may use the computer while the battery is draining.

3. Your battery is reconditioned.


4. Plug in the AC adapter and begin using the computer.

The table below shows the approximate battery pack charge times.

Approximate Battery Charge Time		
Computer	On Line	Off Line
NiMH Battery Pack	4.0 hours premature termination	2:00 hrs
Li ion Battery Pack	4.5 hours premature termination	2:50 hrs

Disposing of a Used Battery Pack

In the interest of safeguarding our environment, Compaq Computer Corporation recommends that nickel metal hydride (NiMH) and lithium ion (Li ion) battery packs be recycled. Battery packs should be handled in accordance with country, state, province, or local regulations.

	CAUTION: Never attempt to open or service a battery pack. Opening a battery pack not only damages the pack and makes it unusable, but also exposes potentially harmful battery components.
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[Top of Page](#)

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[privacy and legal statement](#)

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[STORE](#) | [PRODUCTS](#) | [SERVICES](#) | [SUPPORT](#) | [CONTACT US](#) | [SEARCH](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

| [Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Product Description

Models and Features

Models and Features	Compaq Presario Series Portable Computer Models		
		Model 1246	Model 1247
Controls and Lights	Display	12.1" HPA	12.1" HPA
Front Bezel Lights	Processor	AMD-K6II MMX 400-Mhz	AMD-K6II MMX 400-Mhz
Front Bezel Buttons	Hard Drive	4.3-GB	4.3-GB
Left Side Components	CD Drive	24x CD-ROM	24x CD-ROM
Right Side Components	Modem	56.0 Kbps PCI data/fax	56.0 Kbps PCI data/fax
Bottom of Unit	System Memory	32-MB	32-MB
Rear Connectors	Battery	3800 MAH NiMH	3800 MAH NiMH
		Model 1277	Model 1278
	Display	13.0" HPA	12.1" HPA
	Processor	AMD-K6II MMX 400-Mhz (or) AMD-K6II MMX 433-Mhz	AMD-K6II MMX 433-Mhz

Power Management for Windows 98

Hard Drive	4.8-GB	4.8-GB
CD Drive	24x CD-ROM	24x CD-ROM
Modem	56.0 Kbps PCI data/fax	56.0 Kbps PCI data/fax
System Memory	64-MB	64-MB
Battery	3200 MAH sLION	3200 MAH sLION
	Model 1279	
Display	12.1" HPA	
Processor	AMD-K6II MMX 433-Mhz	
Hard Drive	4.8-GB	
CD Drive	24x CD-ROM	
Modem	56.0 Kbps PCI data/fax	
System Memory	64-MB	
Battery	3200 MAH sLION	

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[STORE](#) | [PRODUCTS](#) | [SERVICES](#) | [SUPPORT](#) | [CONTACT US](#) | [SEARCH](#)

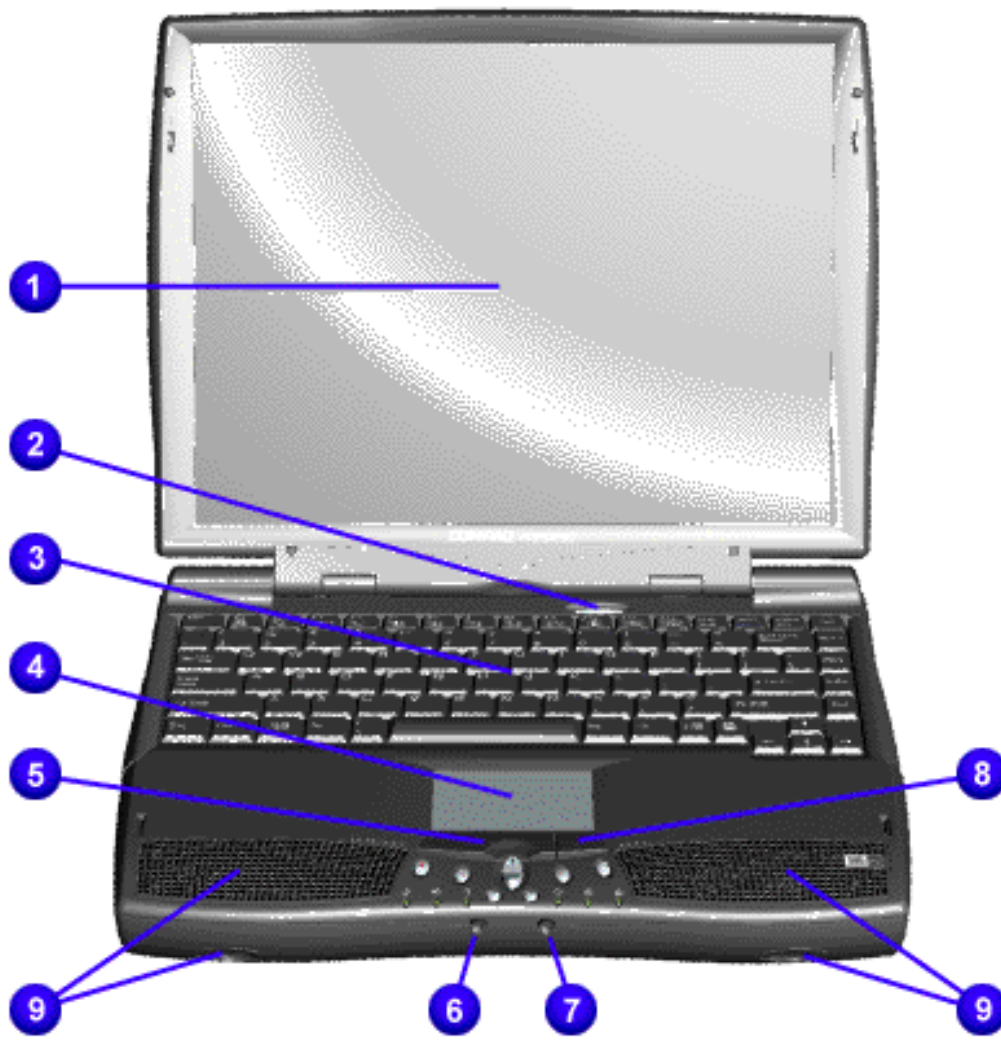
Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications Pin Assignments](#) | [Battery Pack Operations](#)

Product Description

Controls and Lights

Models and Features
Controls and Lights
Front Bezel Lights
Front Bezel Buttons
Left Side Components
Right Side Components
Bottom of Unit
Rear Connectors
Power Management for Windows 98



- | |
|----------------------------------|
| 1. Display |
| 2. Power (On/Off) Button |
| 3. Keyboard |
| 4. Touch Pad |
| 5. Touch Pad Button (Left) |
| 6. Headphone Jack |
| 7. Microphone Jack |
| 8. Touch Pad Button (Right) |
| 9. Integrated Speakers and Ports |



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[privacy and legal statement](#)

COMPAQ	STORE PRODUCTS SERVICES SUPPORT CONTACT US SEARCH
---------------	---

Maintenance & Service Guide

Presario Series

Models: 1246, 1247, 1277, 1278, and 1279

- [Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Product Description

Front Bezel Lights

[Models and Features](#)

[Controls and Lights](#)

Front Bezel Lights

[Front Bezel Buttons](#)

[Left Side Components](#)

[Right Side Components](#)

[Bottom of Unit](#)

[Rear Connectors](#)



- | |
|-------------------------|
| 1. Power Light |
| 2. Battery Charge Light |
| 3. Power Cord Light |
| 4. Num Lock Light |
| 5. Cap Lock Light |
| 6. Scroll Lock Light |

**Power
Management
for Windows
98**

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[privacy and legal statement](#)

Maintenance & Service Guide

Presario Series

Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Product Description

Front Bezel Buttons

[Models and Features](#)

[Controls and Lights](#)

[Front Bezel Lights](#)

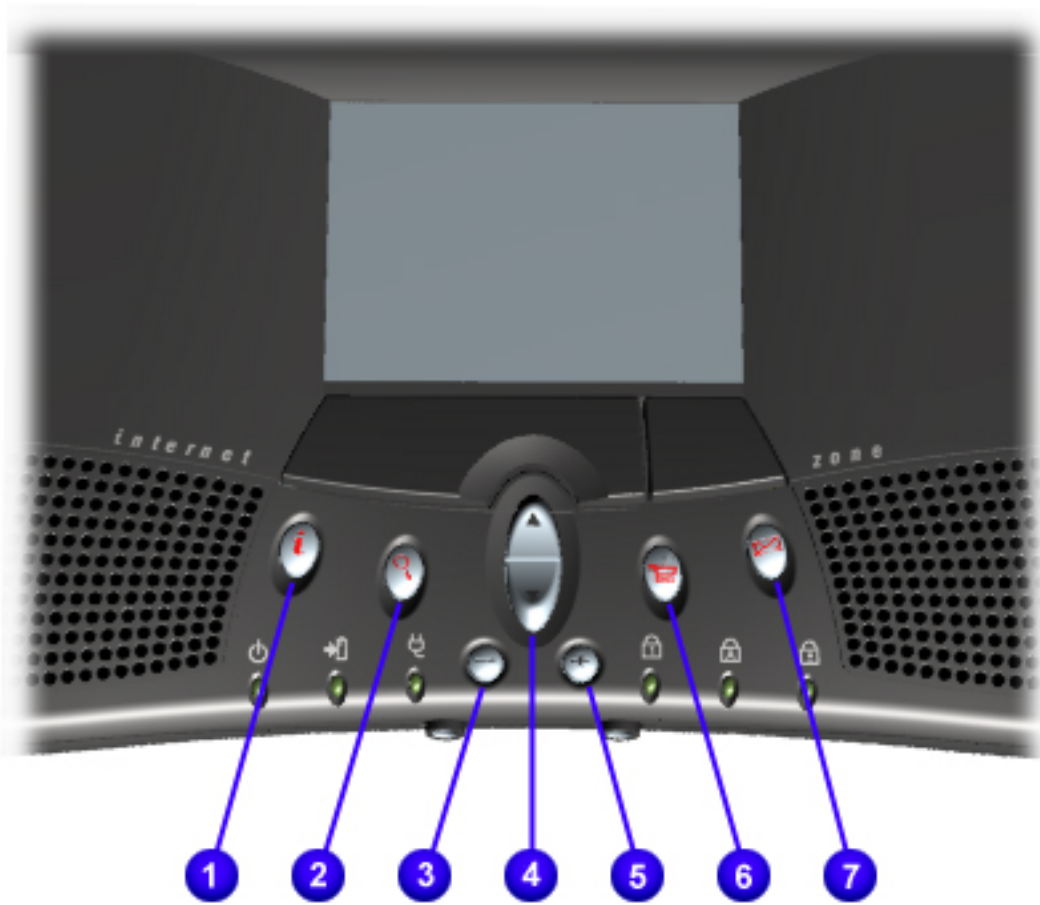
[Front Bezel Buttons](#)

[Left Side Components](#)

[Right Side Components](#)

[Bottom of Unit](#)

[Rear Connectors](#)



1. Instant Internet Access Button

2. Instant Search Button

3. Volume Down Button

4. Scroll Up/Down Button

5. Volume Up Button

6. Secure E-Commerce Button (or favorite Web site)

[Power Management for Windows 98](#)

7. Instant E-Mail Button

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[privacy and legal statement](#)

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[STORE](#) | [PRODUCTS](#) | [SERVICES](#) | [SUPPORT](#) | [CONTACT US](#) | [SEARCH](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Product Description

Left Side Components



- | |
|--------------------------|
| 1. PC Card Eject Lever |
| 2. PC Card Slot |
| 3. Diskette Drive Slot |
| 4. Diskette Eject Button |

[Models and Features](#)

[Controls and Lights](#)

[Front Bezel Lights](#)

[Front Bezel Buttons](#)

Left Side Components

[Right Side Components](#)

[Bottom of Unit](#)

[Rear Connectors](#)

[Power Management for Windows 98](#)

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[privacy and legal statement](#)

COMPAQ

[STORE](#) | [PRODUCTS](#) | [SERVICES](#) | [SUPPORT](#) | [CONTACT US](#) | [SEARCH](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Product Description

Right Side Components

[Models and Features](#)

[Controls and Lights](#)

[Front Bezel Lights](#)

[Front Bezel Buttons](#)

[Left Side Components](#)

[Right Side Components](#)

[Bottom of Unit](#)

[Rear Connectors](#)

[Power Management for Windows 98](#)



1. Battery Compartment
2. CD Drive Eject Button
3. CD Drive Manual Eject Hole

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[STORE](#) | [PRODUCTS](#) | [SERVICES](#) | [SUPPORT](#) | [CONTACT US](#) | [SEARCH](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Product Description

[Models and Features](#)

[Controls and Lights](#)

[Front Bezel Lights](#)

[Front Bezel Buttons](#)

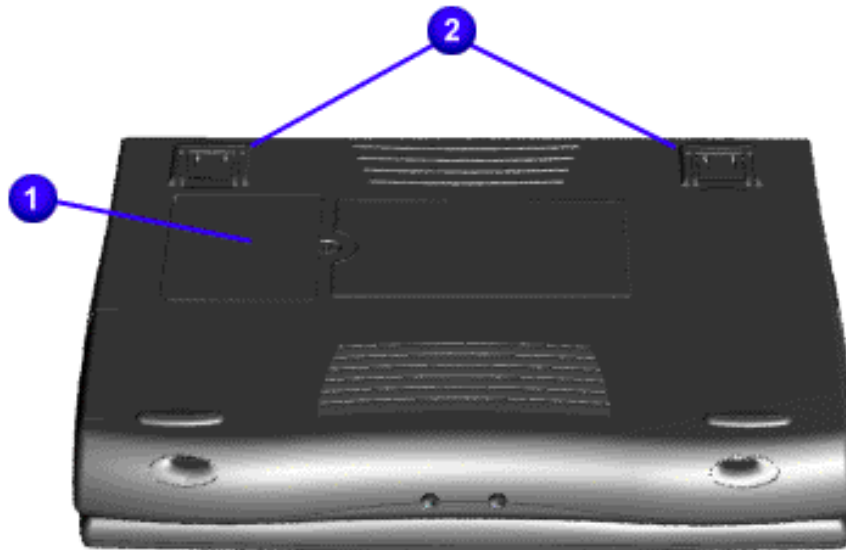
[Left Side Components](#)

[Right Side Components](#)

[Bottom of Unit](#)

[Rear Connectors](#)

[Power Management for Windows 98](#)



Bottom of Unit

1. Memory Compartment Door

2. Stand Feet

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[privacy and legal statement](#)

COMPAQ	STORE PRODUCTS SERVICES SUPPORT CONTACT US SEARCH
---------------	--

Maintenance & Service Guide

Presario Series

Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Product Description

Rear Connectors

[Models and Features](#)

[Controls and Lights](#)

[Front Bezel Lights](#)

[Front Bezel Buttons](#)

[Left Side Components](#)

[Right Side Components](#)

[Bottom of Unit](#)

Rear Connectors



1. AC Adapter

2. Universal Serial Bus

3. Security Slot

4. Serial Port

5. External Monitor Port

6. Parallel Printer Port

7. Keyboard/Mouse Port

[Power Management for Windows 98](#)

8.
Modem Jack

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[privacy and legal statement](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Power Management for Windows 98

The following power management features are available for conserving AC power and extending battery operating time:

- [Power Management Settings](#)
- [Sleep](#)
- [Hibernation](#)
- [Battery operating time](#)
- [Rebooting After a Lockup](#)
- [Servicing Your Computer - Full Off Mode](#)

Power

Power Management Settings

Depending on your patterns of computer use, you can set different levels of power management. These different power management levels can be activated based on the amount of time passed since the last system activity. System activity examples include keyboard or mouse movement, CD playback (while under program control that monitors Sleep), and modem use.

You can select different conditions or power schemes through Power Management. The optional settings are **Home/Office Desk**, **Portable/ Laptop**, and **Always On**. From the default settings, you can change the following settings:

- the System goes to Sleep (Standby) mode
- the screen times out and goes blank
- the hard drive spins down

Each of these system components goes to sleep after the selected or default periods of inactivity. (The setting for hard drive must be less than, or equal to, the setting for System.)

IMPORTANT: If you're on a network, it's recommended that you set **System Standby** to **Never**.

There are five categories of power management settings under the Control Panel. The default setting for each feature is listed below in the tables.

Power Management Properties

Tab: Power Schemes:	Plugged in	Running on Batteries
Always on System Standby:	Never	15 minutes
Turn OFF Monitor	After 3 hours	Never
Always on System Standby:	After 15 minutes	After 10 minutes

Power Management Properties

Tab: Alarms:		
Low Battery Alarm:	10%	
Critical Battery Alarm:	0%	
Alarm Actions:	X Display Message Notification	
	Text Action	No Action

Power Management Properties

Tab: Power Meter:	Default
Tab: Advanced:	Default

Display Properties

Tab: Monitor: Laptop Display (Maximum resolution according to unit display size)

Sleep

You can select Sleep mode instead of turning off the computer when you have finished using it. This allows the computer to wake up faster than turning it completely off and saves power over the active (On) mode. Compaq Presario Series Notebook computers have two levels of sleep-- Hibernation and Sleep.

Hibernation - by pushing the power button once, your computer performs a save to disk followed by a shut down of the computer into Off mode.

Sleep - is a low power mode, also referred to as Standby mode. While in Sleep mode, your computer maintains system information and open files. Unsaved information is lost if you turn off your system prior to system wake-up, or if you lose power while using the AC adapter.



CAUTION: While in Sleep mode, your computer maintains system information and open files. Unsaved information is lost if you turn off your system prior to system wake-up, or if you lose power while using the AC adapter.

Hibernation Mode

Hibernation helps conserve battery life and protects your data. Hibernation can be a routine power-saving event, or can be the result of a low-battery condition. As it enters Hibernation your computer displays a progress screen, as it automatically saves the machine state before it shuts down and turns itself off. Your computer automatically goes into Hibernation when the battery has little power left, or when the system (operating on battery power) has been in Sleep mode for more than an hour. You can also manually initiate Hibernation by pressing the power button once while the system is active. To restore the computer's previous state, simply press the power button once again. While waking up, the computer displays a progress screen.

The following table shows the conditions and indicators for getting in and out of the various power management modes - Sleep, Hibernation, and Off.

Mode	To Initiate	To End	Indicators
Sleep	Manual <u>keys combination</u> - Fn+F4	Press any key	Flashing green Power LED
	<u>Time Out Default</u> 15 minutes. If on Battery power (system will not go to Sleep if on AC power)		
Hibernate	Manual - Press Power button once	Press Power button once	No Power LED, blank screen
	<u>Time Out Default</u> If low battery or after 1 hour of sleep (system will not Hibernate if on AC power)		
Off	Perform normal Windows shutdown via the start button, or press and hold down the power button for 4 seconds	Press Power button once	No Power LED, blank screen

Servicing Your Computer - Full Off Mode

If you need to install or replace components in your system, you must turn the computer off *completely*. Follow the instructions above for properly placing the computer into Off mode. Then, unplug the computer from the AC outlet and remove the battery (see battery section for [instruction for removing the battery pack](#)).

Rebooting After a Lockup

Occasionally you may encounter a frozen keyboard or a locked screen. To reboot your computer (as if from

a cold start) press and hold down the Power Button for at least four seconds, which will cause a manual shutdown. Then, restart it with a single press of the Power Button. If it still doesn't recover, do the following:

1. Press the Power Button and hold it for four seconds to shut it down.
2. Remove the battery or unplug the AC power for at least 30 seconds.
3. Reinsert the battery or reconnect AC power.
4. Press the Power Button once to reboot.

Battery Operating Time

Battery operating time is affected by variables, such as the following:

- Power conservation settings
- Hardware configuration
- Software applications
- Installed options
- Display brightness
- Hard drive usage
- Power button
- Changes in operating temperature
- Type and number of installed PC Cards

For more information on increasing battery pack operating time, conditioning the battery pack, and disposing of a used battery pack, refer to the [Battery Pack Operations](#).

[Top of Page](#)

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[privacy and legal statement](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Troubleshooting

Preliminary Steps

Preliminary Steps

[Clearing the Power-On Password](#)

[Power-On Self Test \(POST\)](#)

[Compaq Diagnostics](#)

[Diagnostic Error Codes](#)

[Troubleshooting Without Diagnostics](#)

[Solving Minor Problems](#)

[Contacting Compaq Support](#)

Before running [POST](#), complete the following preliminary steps:

1. If a power-on password has been established, type the password and press the **Enter** key. If the password is not known, [clear the password](#) .
2. Run [Computer Checkup](#).
3. Turn off the computer and its external devices.
4. Disconnect any external devices that you do not want to test. Do not disconnect the printer if you want to test it or use it to log error messages.

IMPORTANT: If the problem only occurs when an external device is connected to the computer, the problem may be related to the external device or its cable. Verify this by running POST with and without the external device connected.

5. Install loopback plugs in the serial and parallel connectors if you would like to test these ports.
6. Ensure the hard drive is installed in the computer.
7. Ensure that the battery pack is inserted in the computer and the computer is connected to an external AC power source.

When the preliminary steps are completed, you are ready to run [POST](#).

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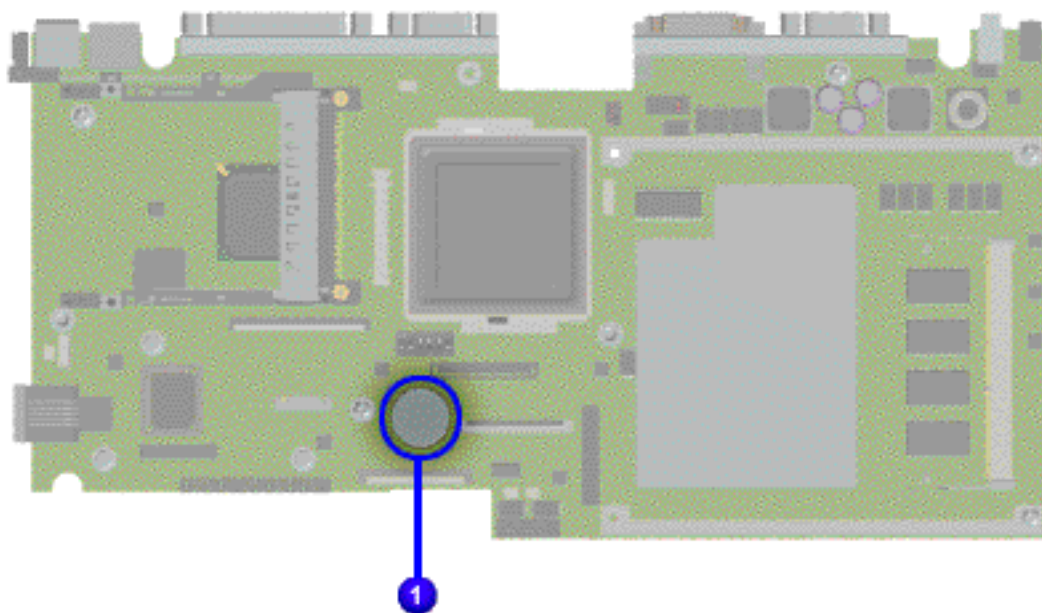
[privacy and legal statement](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Troubleshooting

Clearing the Power-on Password



Clearing the power-on password requires removing all Setup attributes that are programmed in the CMOS. The RTC battery **1** is located on the system board.

If the password is not known, clear it by performing the following steps:

1. Turn off the computer.
2. Disconnect the power cord.
3. Remove the [battery pack](#).
4. Remove the [Palmrest](#)

[Cover with Touch Pad.](#)

5. Remove the [heatspreader](#).

6. Remove the [keyboard](#).

7. Remove RTC battery for 30 seconds and replace it.

8. Reassemble the computer.

9. Turn on the computer to verify that the power-on password has been cleared. If it has not been cleared, repeat Steps 1 through 9.

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[privacy and legal statement](#)

COMPAQ

[STORE](#) | [PRODUCTS](#) | [SERVICES](#) | [SUPPORT](#) | [CONTACT US](#) | [SEARCH](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Troubleshooting

Power-On Self Test (POST)

Running POST

To run POST, turn off the computer. Then turn on the computer.

If POST does not detect any errors, the computer will not beep. This indicates successful completion of POST test. POST has run successfully and boots from the hard drive (or from a bootable diskette if one is installed in the diskette drive).

If POST detects errors, the errors are indicated by screen and/or audible messages. Refer to "Power-On Self-Test (POST) Codes" in the tables for a list of POST codes and their relevant descriptions.

NOTE:

If the system is not functioning well enough to run POST, or if the display is not functioning well enough to show POST error messages, refer to the Troubleshooting tables.

NOTE:

The following routines are sorted by their test point numbers assigned in the BIOS code. Their actual orders, as executed during POST, can be quite different.

Code	Beeps	POST Routine Description
02h		Verify Real Mode
03h		Disable Non-Maskable Interrupt (NM)
04h		Get CPU type
06h		Initialize system hardware
08h		Initialize chipset with Initial POST values
09h		Set IN POST flag
0Ah		Initialize CPU registers
0Bh		Enable CPU cache
0Ch		Initialize caches to initial POST values
0Eh		Initialize I/O component
0Fh		Initialize the local bus IDE
10h		Initialize Power Management
11h		Load alternate registers with initial POST values
12h		Restore CPU control word during warm boost
13h		Initialize PCI Bus Mastering devices
14h		Initialize keyboard controller
16h	1-2-2-3	BIOS ROM Checksum
17h		Initialize cache before memory autosize
18h		8254 timer initialization
1Ah		8237 DMA controller initialization
1Ch		Reset Programmable Interrupt Controller
20h	1-3-1-1	Test DRAM refresh
22h	1-3-1-3	Test 8742 Keyboard Controller
24h		Set ES segment register to 4 GB
26h		Enable A20 line
28h		Autosize DRAM
29h		Initialize POST Memory Manager
2Ah		Clear 512 KB base RAM

2Ch	1-3-4-2	RAM failure on address line xxxx*
2Eh	1-3-4-3	RAM failure on data bits xxxx* of low byte of memory bus
2Fh		Enable cache before system BIOS shadow
30th	1-4-1-1	RAM failure on data bits xxxx* of high byte memory bus
32h		Test CPU bus-clock frequency
33h		Initialize Phoenix Dispatch Manager
36h		Warm start shut down
38h		Shadow system BIOS ROM
3Ah		Autosize cache
3Ch		Advanced configuration of chipset registers
3Dh		Load alternate registers with CMOS values
42h		Initialize interrupt vectors
45h		POST device initialization
46h	2-1-2-3	Check ROM copyright notice
48h		Check Video configuration against CMOS
49h		Initialize PCI bus and devices
4Ah		Initialize all video adapters in system
4Bh		QuietBoot start (optional)
4Ch		Shadow video BIOS ROM
4Eh		Display BIOS copyright notice
50Eh		Display CPU type and speed
51h		Initialize EISA board
52h		Test keyboard
54h		Set key click if enabled
58h	2-2-3-1	Test for unexpected interrupts
59h		Initialize POST display service
5Ah		Display prompt "Press F2 to enter SetUP"
5Bh		Disable CPU cache
5Ch		Test RAM between 512 and 640 KB
60h		Test extended memory
62h		Test extended memory address lines

64h	Jump to UserPatch1
66h	Configure advanced cache registers
67h	Initialize Multi Processor APIC
68h	Enable external and CPU cache
69h	Setup System Management Mode (SMM) area
6Ah	Display external L2 cache size
6Bh	Load custom defaults (optional)
6Ch	Display shadow-area message
6Eh	Display possible high address for UMB recovery
70h	Display error messages
72h	Check for configuration errors
76h	Check for keyboard errors
7Ch	Set up hardware interrupt vectors
7Eh	Initialize coprocessor if present
80h	Disable onboard Super I/O ports and IRQs
81h	Late POST device initialization
82h	Detect and install external RS232 ports
83h	Configure non-MCD IDE controllers
84h	Detect and install external parallel ports
85h	Initialize PC-compatible PnP ISA devices
86h	Reinitialize onboard I/O ports
87h	Configure Motherboard Configurable Devices (optional)
88h	Initialize BIOS Data Area
89h	Enable Non-Maskable Interrupts (NMIs)
8Ah	Initialize Extended BIOS Data Area
8Bh	Test and initialize PS/2 mouse
8Ch	Initialize floppy controller
81h	Determine number of ATA drives (optional)
90h	Initialize hard disk controllers
91h	Initialize local-bus hard disk controllers
92h	Jump to UserPatch2

93h		Build MPTABLE for multi-processor boards
95h		Install CD ROM for boot
96h		Clear huge ES segment register
97h		Fixup Multi Processor table
98h	1-2	Search for option ROMs. One long, two short beeps on checksum failure
99h		Check for SMART drive (optional)
9Ah		Shadow option ROMs
9Ch		Set up Power Management
9Dh		Initialize security engine (optional)
9Eh		Enable hardware interrupts
9Fh		Determine number of ATA and SCSI drives
A0h		Set time of day
A2h		Check key lock
A4h		Initialize Typematic rate
A8h		Erase F2 prompt
AAh		Scan for F2 key stroke
ACh		Enter Setup
AEh		Clear Boot flag
B0h		Check for errors
B2h		POST done - prepare to boot operating system
B4h	1	One shot beep before boot
B5h		Terminate QuietBoot (optional)
B6h		Check password (optional)
B9h		Prepare Boot
BAh		Initialize DMI Parameters
BBh		Initialize PnP Option ROMs
BCh		Clear parity checkers
BDh		Display MultiBoot menu
BEh		Clear screen (optional)
BFh		check virus and back up reminders

C0h	Try to boot with INT 19
C1h	Initialize POST Error Manager (PEM)
C2h	Initialize error logging
C3h	Initialize error display function
C4h	Initialize system error handler
C5h	PnPnd dual CMOS (optional)
C6h	Initialize notebook docking (optional)
C7h	Initialize notebook docking late
C8h	Force check (optional)
C9h	Extended checksum (optional)
D2h	Unknown interrupts

Code	Beeps	For Boost Block in Flash ROM
E0h		Initialize the chipset
E1h		Intitialize the bridge
E2h		Initialize the CPU
E3h		Initialize system timer
E4h		Initializesystem I/O
E5h		Check force recovery boot
E6h		Checksum BIOS ROM
E7h		Go to BIOS
E8h		Set Huge Segment
E9h		Initialize Multi Processor
EAh		Initialize OEM Special code
EBh		Initialize PIC and DMA
ECh		Initialize Memory type
EDh		Initialize Memory size
EEh		Shadow Boot Block
EFh		System memory test
F0h		Initialize interrupts vectors
F1h		Initialize Run Time Clock

F2h		Initialize Video
F3h		Initialize beeper
F4h		Initialize boot
F5h		Clear Huge segment
F6h		Boot to Mini DOS
F7h		Boot to Full DOS



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[STORE](#) | [PRODUCTS](#) | [SERVICES](#) | [SUPPORT](#) | [CONTACT US](#) |
[SEARCH](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Troubleshooting

Compaq Diagnostics

Compaq Diagnostics is installed on the hard drive of the computer. Run the Diagnostics utilities when you want to view or test system information and if you have installed or connected devices. If you run Compaq Diagnostics from a diskette, ensure that it is version 10.11 or later.

The Diagnostics menu includes the following utilities:

- [Computer Checkup \(TEST\)](#)
- [View System Information \(INSPECT\)](#)
- [Prepare Computer for a Compaq Service Call \(RemotePaq\)](#)

If you have a problem you cannot solve, run the Diagnostics utilities before you call for support. Run Computer Checkup and select to save the device list to a file and to print or to save the error log. Run the View System Information (INSPECT) utility and select to print or to save that information. Have the files or the printed information available when you call for support.

Computer Checkup (TEST)

Computer Checkup (TEST) determines whether the various computer components and devices are recognized by the system and are functioning properly. You can display, print, or save the information generated by Computer Checkup.

Follow these steps to run Computer Checkup:

1. Plug the computer into an external power source. (A low battery condition could interrupt the program.)
2. Turn on the external devices that you want to test. Connect the printer if you want to print a log of error messages.
3. Insert the Compaq Diagnostics diskette in drive **A**.
4. Turn on or restart the computer. The computer starts from drive **A**, and the **Diagnostics Welcome** screen appears.
5. Press **Enter** to continue. The **Diagnostics** menu appears.
6. Select Computer Checkup from the **Diagnostics** menu. A **Test Option** menu appears.
7. Select **View the Device List** from the **Test Option** menu. A list of the installed Compaq devices appears.
8. If the list of installed devices is correct, select **OK**. The **Test Option** menu appears.

NOTE: If the list is incorrect, ensure that any new devices are installed properly.

9. Select one of the following from the **Test Option** menu:
 - **Quick Check Diagnostics.** Runs a quick, general test on each device with a minimal number of prompts.
If errors occur, they display when the testing is complete. You cannot print or save the error messages.
 - **Automatic Diagnostics.** Runs unattended, maximum testing of each device with minimal prompts.
You can choose to run the tests for a specified number of times, to stop on errors, or to print or save an error log.
 - **Prompted Diagnostics.** Allows maximum control over testing the devices. You can choose attended or unattended testing, decide to stop on errors, or choose to print or save an error log.
10. Follow the instructions on the screen as the devices are tested. When testing is complete, the **Test Option** menu appears.

11. Exit the **Test Option** menu.

12. Exit the **Diagnostics** menu.

View System Information (INSPECT)

The View System Information (INSPECT) utility provides information about the computer and installed or connected devices. You can display, print, or save the information.

Follow the steps listed below to run View System Information (INSPECT) from the Compaq Diagnostics diskette:

1. Turn on the external devices that you want to test. Connect the printer if you want to print the information.
2. Insert the Compaq Diagnostics diskette in drive **A**.
3. Turn on or restart the computer. The computer starts from drive **A**, and the **Diagnostics Welcome** screen appears.
4. Press **Enter** to continue. The Diagnostics menu appears.
5. Select **View System Information (INSPECT)** from the **Diagnostics** menu.
6. Select the item you want to view from the following list:

System

ROM

Keyboard

System ports

System storage

Graphics

Memory

Audio

Operating system

System files

Windows files

7. Follow the instructions on the screen to cycle through the screens, to return to the list and choose another item, or to print the information.

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[STORE](#) | [PRODUCTS](#) | [SERVICES](#) | [SUPPORT](#) | [CONTACT US](#) | [SEARCH](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Troubleshooting

Diagnostic Error Codes

Diagnostic error codes occur if the system recognizes a problem while running the Compaq Diagnostic program. These error codes help identify possibly defective subassemblies.

The following tables list error codes, a description of the error condition, and the action required to resolve the error condition.

IMPORTANT:

Retest the system after completing each step. When a step resolves the problem, do not proceed with the remaining steps.

For the removal and replacement of a particular subassembly, see [Removal and Replacement Procedures](#).

Select error codes by number or type:

[101 through 114](#)

[200 through 215](#)

[300 through 304](#)

[401 through 403](#)

[501 through 516](#)

[600 through 699](#)

[1101](#)

[1701 through 1736](#)

[2402 through 2480](#)

[3206](#)

[8601 through 8602](#)

[3301 through 6623](#)

[Processor Test](#)

[Memory Test](#)

[Keyboard Test](#)

[Parallel Printer Test](#)

[Video Test](#)

[Diskette Drive Test](#)

[Serial Test](#)

[Hard Drive Test](#)

[Video Test](#)

[Audio Test](#)

[TouchPad/Pointing Device interface Test](#)

[CD Drive Test](#)

Processor Test Error Codes

Error Code	Description	Recommended Action
101-xx	CPU test failed	Replace the processor and retest.
102-xx	Coprocessor or Weitek Error	1. Run the Configuration and Diagnostics Utilities. 2. Replace the processor board and retest.
103-xx	DMA page registers test failed.	Replace the system board and retest.
104-xx	Interrupt controller master test failed.	
105-xx	Port 61 error	
106-xx	Keyboard controller self-test failed.	
107-xx	CMOS RAM test failed.	
108-xx	CMOS interrupt test failed.	
109-xx	CMOS clock test failed.	
110-xx	Programmable timer load data test failed.	
113-xx	Protected mode test failed.	
114-01	Speaker test failed.	

Memory Test Error Codes

200-xx	Memory machine ID test failed.	1. Flash the system ROM and retest.
202-xx	Memory system ROM checksum failed.	2. Replace the system board and retest.
203-xx	Write/Read test failed.	1. Remove the memory module and retest. 2. Install a new memory module and retest.
204-xx	Address test failed.	
211-xx	Random pattern test failed.	
214-xx	Noise test failed.	
215-xx	Random address test failed.	

Keyboard Test Error Codes

300-xx	Failed ID Test	1. Check the keyboard connection. If disconnected, turn off the computer and connect the keyboard.
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301-xx	Failed Selftest/Interface Test	2. Replace the keyboard and retest. 3. Replace the system board and retest.
302-xx	Failed Individual Key Test	
304-xx	Failed Keyboard Repeat Test	

Parallel Printer Test Error Codes

401-xx	Printer failed or not connected	1. Connect the printer. 2. Check power to the printer. 3. Install the loop-back connector and retest. 4. Check port and IRQ configuration. 5. Replace the system board and retest.
402-xx	Failed Port Test	
403-xx	Failed Printer Pattern Test	

Video Test Error Codes (501-xx through 516-xx)

501-xx	Failed Video Controller Test	1. Disconnect external monitor and test with internal LCD display. 2. Replace the display assembly and retest. 3. Replace the system board and retest.
502-xx	Failed Video Memory Test	
503-xx	Failed Video Attribute Test	
504-xx	Failed Video Character Set Test	
505-xx	Failed Video 80 x 25 mode 9 x 14 Character Cell Test	
506-xx	Failed Video 80 x 25 mode 8 x 8 Character Cell Test	
507-xx	Failed Video 40 x 25 Mode Test	
508-xx	Failed Video 320 x 200 Mode Color Set 0 Test	
509-xx	Failed Video 320 x 200 Mode Color Set 1 Test	
510-xx	Failed Video 640 x 200 Mode Test	
511-xx	Failed Video Screen Memory Page Test	
512-xx	Failed Video Gray Scale Test	
514-xx	Failed Video White Screen Test	
516-xx	Failed Video Noise Pattern Test	

Diskette Drive Test

600-xx	Failed Diskette ID Drive Types Test	1. Replace the diskette media and retest. 2. Check and/or replace the
601-xx	Failed Diskette Format	
602-xx	Failed Diskette Read Test	

603-xx	Failed Diskette Write/Read/Compare Test	diskette power and signal cables and retest. 3. Replace the diskette drive and retest. 4. Replace the system board and retest.
604-xx	Failed Diskette Random Read Test	
605-xx	Failed Diskette ID Media	
606-xx	Failed Diskette Speed Test	
609-xx	Failed Diskette Reset Controller Test	
610-xx	Failed Diskette Change Line Test	
697-xx	Diskette type error	
698-xx	Diskette drive speed not within limits	1. Replace media. 2. Run the Configuration and Diagnostics Utilities.
699-xx	Diskette drive/media ID error	

Serial Test Error Codes

1101-xx	Failed Serial Port Test	1. Check port configuration. 2. Replace the system board and retest.
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Hard Drive Test Error Codes

1701-xx	Failed Hard Drive Format Test	1. Run the Configuration and Diagnostics Utilities and verify drive type. 2. Verify that all secondary drives have secondary drive capability. 3. Replace the hard drive and retest. 4. Replace the system board and retest.
1702-xx	Failed Hard Drive Read Test	
1703-xx	Failed Hard Drive Write/Read/Compare Test	
1704-xx	Failed Hard Drive Random Seek Test	
1705-xx	Failed Hard Drive Controller Test	
1706-xx	Failed Hard Drive Ready Test	
1707-xx	Failed Hard Drive Recalibration Test	
1708-xx	Failed Hard Drive Format Bad Track Test	
1709-xx	Failed Hard Drive Reset Controller Test	
1710-xx	Failed Hard Drive Park Head Test	
1715-xx	Failed Hard Drive Head Select Test	
1716-xx	Failed Hard Drive Conditional Format Test	
1717-xx	Failed Hard Drive ECC* Test	
1719-xx	Failed Hard Drive Power Mode Test	
1724-xx	Failed Network Preparation Test	
1736-xx	Failed Drive Monitoring Test	

*ECC = Error Correction Code

Video Test Error Codes (2402-xx through 2480-xx)

2402-xx	Failed Video Memory Test	<ol style="list-style-type: none"> 1. Run the Configuration and Diagnostics Utilities 2. Replace the display assembly and retest. 3. Replace the system board and retest.
2403-xx	Failed Video Attribute Test	
2404-xx	Failed Video Character Set Test	
2405-xx	Failed Video 80 x 25 mode 9 x 14 Character Cell Test	
2406-xx	Failed Video 80 x 25 mode 8 x 8 Character Cell Test	
2408-xx	Failed Video 320 x 200 Mode Color Set 0 Test	
2409-xx	Failed Video 320 x 200 Mode Color Set 1 Test	
2410-xx	Failed Video 640 x 200 Mode Test	
2411-xx	Failed Video Screen Memory Page Test	
2412-xx	Failed Video Gray Scale Test	
2414-xx	Failed Video White Screen Test	
2416-xx	Failed Video Noise Pattern Screen	
2418-xx	Failed ECG/VGC Memory Test	
2419-xx	Failed ECG/VGC ROM Checksum Test	
2421-xx	Failed ECG/VGC 640 x 200 Graphics Mode Test	
2422-xx	Failed ECG/VGC 640 x 350 16 Color Set Test	
2423-xx	Failed ECG/VGC 640 x 350 64 Color Set Test	
2424-xx	Failed ECG/VGC Monochrome Text Mode Test	
2425-xx	Failed ECG/VGC Monochrome Graphics Mode Test	
2431-xx	Failed 640 x 480 Graphics Test	
2432-xx	Failed 320 x 200 Graphics (256 Color Mode) Test	
2448-xx	Failed Advanced VGA Controller Test	
2451-xx	Failed 132-Column Advanced VGA Test	
2456-xx	Failed Advanced VGA 256 Color Test	
2458-xx	Advanced VGA BitBLT Test	<p>Replace the system board and retest.</p>
2468-xx	Advanced VGA DAC Test	

2477-xx	Advanced VGA Data Path Test
2478-xx	Advanced VGA BitBLT Test
2480-xx	Advanced VGA LineDraw Test

Audio Test Error Codes

3206-xx	Audio System Internatl Error	Replace the system board and retest.
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TouchPad/Pointing Device Interface Test Error Codes

8601-xx	Failed Mouse Test	1. Replace the TouchPad and retest.
8602-xx	Failed Interface Test	2. Replace the system board and retest.

CD Drive Test Error Codes

3301-xx	Failed CD Drive Read Test	1. Replace the CD and retest.
3305-xx	Failed CD Drive Seek Test	2. Verify that the speakers are connected.
6600-xx	Failed ID Test	3. Verify that drivers are loaded and properly installed.
6605-xx	Failed Read Test	4. Replace the CD drive and retest.
6608-xx	Failed Controller Test	5. Replace the system board and retest.
6623-xx	Failed Random Read Test	

[***Back to top***](#)

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[privacy and legal statement](#)

Maintenance & Service Guide

Presario Series

Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Troubleshooting Without Diagnostics

This section provides information about how to identify and correct some common hardware, memory, and software problems. It also explains several types of common messages that may be displayed on the screen. The following pages contain troubleshooting information on:

Audio
Battery/Battery gauge
CD drive
Diskette/Diskette drive
Display
Hard drive
Hardware Installation
Memory
PC Card
Power
Printer
Touch Pad
Keyboard/Numeric Keypad

Since symptoms can appear to be similar, carefully match the symptoms of the computer malfunction against the problem description in the Troubleshooting tables to avoid a misdiagnosis.



WARNING: To avoid a potential shock hazard during troubleshooting procedures, disconnect all power sources before removing the keyboard cover or the display bezel.

Before Replacing Parts

Verify that cables are connected properly to the suspected defective parts.

- Run Computer Setup after connecting external devices.
- Verify that all required device drivers are installed.

- Verify that all required changes have been made to the *CONFIG.SYS* file.
- Verify that all required changes have been made to the *AUTOEXEC.BAT* file.
- Verify that all printer drivers have been installed for each application.

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[privacy and legal statement](#)

Maintenance & Service Guide

Presario Series

Models: 1246, 1247, 1277, 1278, and 1279

[| Home Page](#) | [| Notice](#) | [| Preface](#) | [| Product Description](#) | [| Troubleshooting](#)
[| Illustrated Parts Catalog](#) | [| Removal & Replacement Procedures](#) | [| Specifications](#)
[| Pin Assignments](#) | [| Battery Pack Operations](#)

Troubleshooting Without Diagnostics

Solving Minor Problems

Some minor problems and possible solutions are outlined in the following tables. If the problem appears related to a software application, check the documentation provided with the software.

Solving Audio Problems

Some common audio problems and solutions are listed in the following table.

Solving Audio Problems		
Problem	Probable Cause	Solution(s)
Computer does not beep after the Power-On Self-Test (POST).	This is typical; it indicates successful completion of the Power-On Self-Test (POST).	No action is required.

Solving Battery Pack and Battery Gauge Problems

Some common causes and solutions for battery pack problems are listed in the following table. The "Solving Power Problems" section in this chapter may also be applicable.

Solving Battery Pack and Battery Gauge Problems		
Problem	Probable Cause	Solution(s)
Computer won't turn on when battery pack is inserted and power cord is unplugged.	Battery pack is discharged.	Connect the computer to an external power source and charge the battery pack. Replace the battery pack with a fully charged battery pack.
		Check the battery connectors on the system board to verify they are evenly spaced and that they are not bent or broken.

Computer is beeping and battery LED icon is blinking.	Battery charge is low.	Immediately save any open file(s). Then do any one of the following: <ul style="list-style-type: none"> • Connect the computer to an external power source to charge the battery pack. • Turn off the computer or initiate Hibernation until you can find another power source or charge the battery pack.
Computer battery LED icon (front on the unit) blinks to indicate low battery condition, but computer does not beep.	Volume is turned down too low.	Adjust the volume.
Battery LED icon doesn't light and battery pack won't fast charge.	Battery pack is already charged.	No action is necessary.
	Battery pack was exposed to temperature extremes.	Allow time for the battery pack to return to room temperature.
	Battery pack is at end of its life.	Replace battery pack.
You have to set the date and time every time you turn on the computer.	RTC battery is dead.	Replace the RTC battery.

Problem	Probable Cause	Solution(s)
Battery charge does not last as long as expected.	Battery is being exposed to high temperatures or extremely cold temperatures.	Keep the battery pack within the recommended operating temperature range 50° F to 104° F (10° C to 40° C) or recommended storage range -4° F to 86° F (-20° C to 30° C). Recharge the battery pack.
	Battery has partially self-discharged.	Recharge the battery. Discharge the battery completely and then recharge it.
	Power management is disabled.	Set a power management level in Computer Setup.
	An external device or PC Card is draining the battery.	Turn off or disconnect external devices when not using them.
Battery pack is warm to the touch after charging.	Normal warming has occurred due to charging.	No action is required.
Battery pack operating time is far less than the documented average operating time.	Power management is turned off or disabled.	Enable power management in Computer Setup and in Windows Power Properties.
	An external device or PC Card is draining the battery.	Turn off or disconnect external devices when not using them.

	Battery pack has partially self-discharged.	<p>Condition the battery pack by fully charging, fully discharging, then fully recharging it.</p> <p>To maintain the charge, leave battery packs in the computer when it is connected to external power.</p> <p>If the computer is disconnected from external power for more than two weeks, remove battery packs from the computer to reduce the discharge rate.</p>
	Battery pack is being exposed to high temperatures or extremely cold temperatures.	<p>Keep the battery pack within the recommended temperature ranges. Operating: 50° F to 104° F (10° C to 40° C) Storage: -4° F to 86° F (-20° C to 30° C)</p> <p>Recharge the battery pack.</p>

Solving CD Drive Problems

Some common causes and solutions for CD drive problems are listed in the following table.

Solving CD Drive Problems		
Problem	Probable Cause	Solution(s)
CD drive cannot read a compact disc.	Compact disc is upside down or is improperly inserted in the CD drive.	Open the CD loading tray, lay the compact disc in it (label side up), then close the tray.
	CD is CD Plus or Pregap/Track 0 type.	Cannot read these type CDs in 24x. Remove the CD.

Solving Diskette and Diskette Drive Problems

Some common causes and solutions for diskette and diskette drive problems are listed in the following table.

Solving Diskette and Diskette Drive Problems		
Problem	Probable Cause	Solution(s)
Diskette drive cannot write to a diskette.	Diskette is write-protected.	Disable the diskette's write-protect feature or use a diskette that is not write-protected.
	Computer is writing to the wrong drive.	Check the drive letter in the path statement.
	Not enough space is left on the diskette.	Use another diskette.

	Drive error has occurred.	Run Computer Checkup from the Compaq Diagnostics diskette.
	Diskette is not formatted.	Format the diskette. At the system prompt, enter FORMAT A:
Diskette drive cannot read a diskette.	The wrong type of diskette is being used.	Use the type of diskette required by the drive.
	Diskette has a bad sector.	Copy files to hard drive or another diskette. Reformat bad floppy.
	Drive error has occurred.	Run Computer Checkup from the Compaq Diagnostics diskette.
	Diskette is not formatted.	Format the diskette. At the system prompt, enter FORMAT A:
Cannot boot from diskette.	Bootable diskette is not in drive A.	Put the bootable diskette in drive A.
	Diskette Boot has incorrect setting in Computer Setup.	Run Computer Setup and set diskette as first to boot.





Solving Display Problems

This section lists some common causes and solutions for computer display and external monitor problems.





You can perform a monitor self-test on an external VGA color or monochrome monitor by disconnecting the monitor from the computer. To do so, complete the following steps:

1. Turn off the monitor.
2. Turn off the computer.
3. Disconnect the monitor signal cable from the computer.
4. Turn on the monitor and allow it to warm up for one minute.

The display should be white. A narrow black border may also appear on the left and right sides of the display. Either of these displays indicates that the monitor is working properly.

Solving Display Problems		
Problem	Probable Cause	Solution(s)
Screen is dim.	Control for brightness or contrast (if applicable) is not set properly.	Adjust the Brightness of the display by using Fn + F7 () or Fn + F8 (). Adjust the Contrast of the display by using Fn + F5 () or Fn + F6 ().
	Computer screen is in direct light.	Tilt display or move computer.
Screen is blank.	Screen save was initiated by Power Management due to lack of user activity.	Press any key or touch the Touch Pad.
	Display has overheated.	If computer is in direct sunlight, move it and allow it to cool off.

Display is blank and the Suspend icon is flashing.	System is in Suspend mode.	Press any key or touch the Touch Pad.
Internal display is blank and the screen on an external monitor displays information.	Display function was switched to the external monitor.	Use Fn + F2 to switch between LCD or CRT .

Problem	Probable Cause	Solution(s)
Internal display flashes or has garbled characters when computer is connected to external monitor.	Using 1024 × 768 or higher resolution on external monitor and have toggled back to internal display, which supports up to 800 × 600.	Restart the computer.
The light tubes on the edge of the display panel do not light up at all and Power-On Self-Test (POST) completes when the unit is powered up. **	Improper backlight or display cable connections	Replace the display assembly.
	Defective inverter board.	Replace the display assembly.
	Defective display cable.	Replace the display assembly.
	Defective display panel.	Replace the display assembly.
	Defective system board.	Replace the system board.
The light tubes on the edge of the display panel do not light up at all and Power-On Self-Test (POST) does not complete when the unit is powered up. **	Defective system board.	Replace the system board.
Backlight (brightness) cannot be adjusted with Fn + F7 () or Fn + F8 (). ***	Improper display cable connections.	1. Reseat the display cable to the system board. 2. Replace the display assembly.
	Defective inverter board.	Replace the display assembly.
	Defective display cable.	Replace the display assembly.
	Defective system board.	Replace the system board.
Contrast cannot be adjusted with Fn + F5 () or Fn + F6 ().	Improper display cable connections.	1. Reseat the display cable to the system board. 2. Replace the display assembly.
	Defective inverter board.	Replace the display assembly.
	Defective display cable.	Replace the display assembly.
	Defective system board.	Replace the system board.


** This problem indicates that the backlight or its power circuitry has failed. Since you cannot observe the POST result on the display panel when the backlight is not functioning, connect the unit to an external monitor before powering the unit up. If an external monitor is not available, verify that POST completes by opening and closing the display, listening for the single or double beep, and watching for the LEDs turn on at the front of the computer.

Problem	Probable Cause	Solution(s)
This display panel has a continuous pattern across it (e.g., a "jailbars" pattern), has a single color on it, or has garbled graphics across the entire panel. This failure is for patterns across the entire panel (not just on one section).	Improper display cable connections	Reseat the display cable to the following until the problem is solved: 1. System board 2. Display assembly
	Defective display cable.	Replace the display assembly.
	Defective inverter board.	Replace the display assembly.
	Defective system board.	Replace the system board.
Ghost bars extending from graphics on the display.	Common characteristic of STN displays.	1. Change the background colors. 2. Adjust the Contrast of the display by using Fn + F5 or Fn + F6 .
A single line, small group of lines, or block appears on the display panel. This failure occurs in only a section of the display panel.	Defective display panel.	Replace the display assembly.

NOTE: To perform a "self-test" on an external VGA color or monochrome monitor, complete the following steps: The screen should be white. A narrow black border may also appear on the left and right sides of the display. Either of these displays indicates that the monitor is working properly.

Solving Hard Drive Problems

Some common causes and solutions for hard drive problems are listed in the following table.

	CAUTION: To prevent loss of information, always maintain an up-to-date backup of your hard drive at all times, in case of errors or failures.
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Solving Hard Drive Problems		
Problem	Probable Cause	Solution(s)

Reading hard drive takes an unusually long time after restarting the computer.	System entered Hibernation due to low battery condition and is now exiting from it.	Give the system time to restore the previously saved data to its exact state before Hibernation.
Hard drive error occurs.	Hard drive has bad sectors or has failed.	Run Computer Checkup.
Hard drive does not work.	Hard drive is not seated properly.	Turn off and unplug the computer, remove the battery pack, and remove and then reinstall the hard drive.

Solving Hardware Installation Problems

Some common causes and solutions for hardware installation problems are listed in the following table.

Solving Hardware Installation Problems		
Problem	Probable Cause	Solutions(s)
A new device is not recognized as part of the computer system.	Cable(s) of new external device are loose or power cables are unplugged.	Ensure that all cables are properly and securely connected.
	Power switch of new external device is not turned on.	Turn off the computer, turn on the external device, then turn on the computer to integrate the device with the computer system.
	Device is not seated properly.	Turn off the computer and reinsert the device.

Solving Keyboard/Numeric Keypad Problems

Some common causes and solutions for keyboard/numeric keypad problems are listed in the following table.

Solving Keyboard/Numeric Keypad Problems		
Problem	Probable Cause	Solution(s)
Embedded numeric keypad on computer keyboard is disabled.	Num Lock function is not enabled.	Press the Shift+NumLk keys to enable the Num Lock function and embedded numeric keypad. The Num Lock icon on the status panel turns on.
Embedded numeric keypad is disabled and Num Lock function is on.	External numeric keypad is connected to the computer.	Disconnect the external numeric keypad from the computer.

Solving Memory Problems

Some common causes and solutions for memory problems are listed in the following table.

Solving Memory Problems		
Problem	Probable Cause	Solution(s)

Memory count during Power-On Self-Test (POST) is incorrect.	Optional memory expansion card is installed incorrectly, is incompatible with the computer, or is defective.	Ensure that the optional memory expansion card is installed correctly.
"Out of Memory" message is displayed on the screen or insufficient memory error occurs during operation.	System ran out of memory for the application.	Check the application documentation for memory requirements. Install additional memory.
	Too many TSR (terminate-and stay-resident) applications are running.	Remove from memory any TSR applications that you do not need.

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[STORE](#) | [PRODUCTS](#) | [SERVICES](#) | [SUPPORT](#) | [CONTACT US](#) |
[SEARCH](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Troubleshooting

Contacting Compaq Support

Obtain the following information before contacting Compaq Reseller Support:

- Product name
- Product serial number
- Purchase date
- Conditions under which the problem occurred
- Any error messages that have occurred
- Hardware configuration
- Type of printer connected
- Hardware/software being used
- Printed result of Computer Checkup (TEST)
- Printed copies of *CONFIG.SYS* and *AUTOEXEC.BAT* files, if possible

Shipping Preparation

To ship the computer, complete the following steps:

1. Back up the critical hard drive files. Ensure that backup tapes/diskette are not exposed to electrical or magnetic fields while stored in transit.
2. Turn off the computer and external devices.
3. Disconnect the external devices from their power sources, then from the computer.

IMPORTANT:

Ensure that there is no diskette in the diskette drive and that there are no PC Cards in the PC slots.

4. Close the display and all exterior doors of the computer.
5. Pack the computer with sufficient packing material to protect it. Use the original packing box or similar packaging.

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STOR

Maintenance & Service Guide

Presario Series

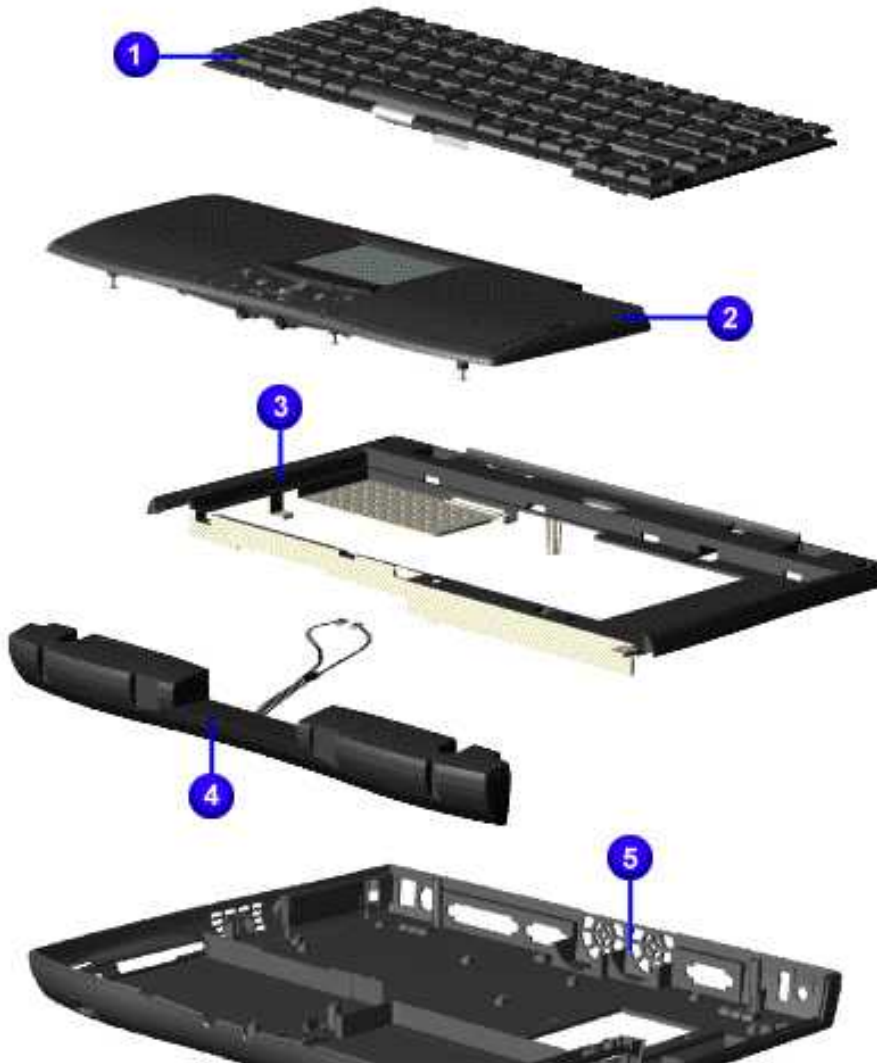
Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

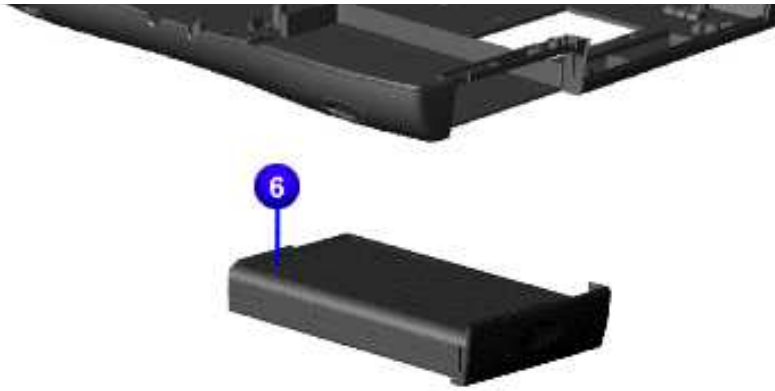
Illustrated Parts Catalog

System Unit

System Unit
Boards
Display Assembly
Mass Storage Devices
Miscellaneous Cable Kit
Miscellaneous Hardware Kit
Miscellaneous Plastics Kit
Miscellaneous Parts
Documentation and Software



Description	Spare Part Number
1. Keyboard	
Palmrest Cover w/TouchPad and Button Board (Models 1277 and 1278)	142654-001
2. Palmrest Cover w/TouchPad and Button Board (Models: 1246, 1247, 1278)	142653-001
2. Palmrest Cover w/TouchPad (without Soft Paint) (Model TBD)	161416-001
3. Upper CPU Cover w/Power Switch	158799-001



4. Speaker Assembly w/ Cables	148108-001
5. Base Enclosure	158798-001
6. Battery Pack	

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Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

| [Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Illustrated Parts Catalog

Boards

[System Unit](#)

Boards

[Display Assembly](#)

[Mass Storage Devices](#)

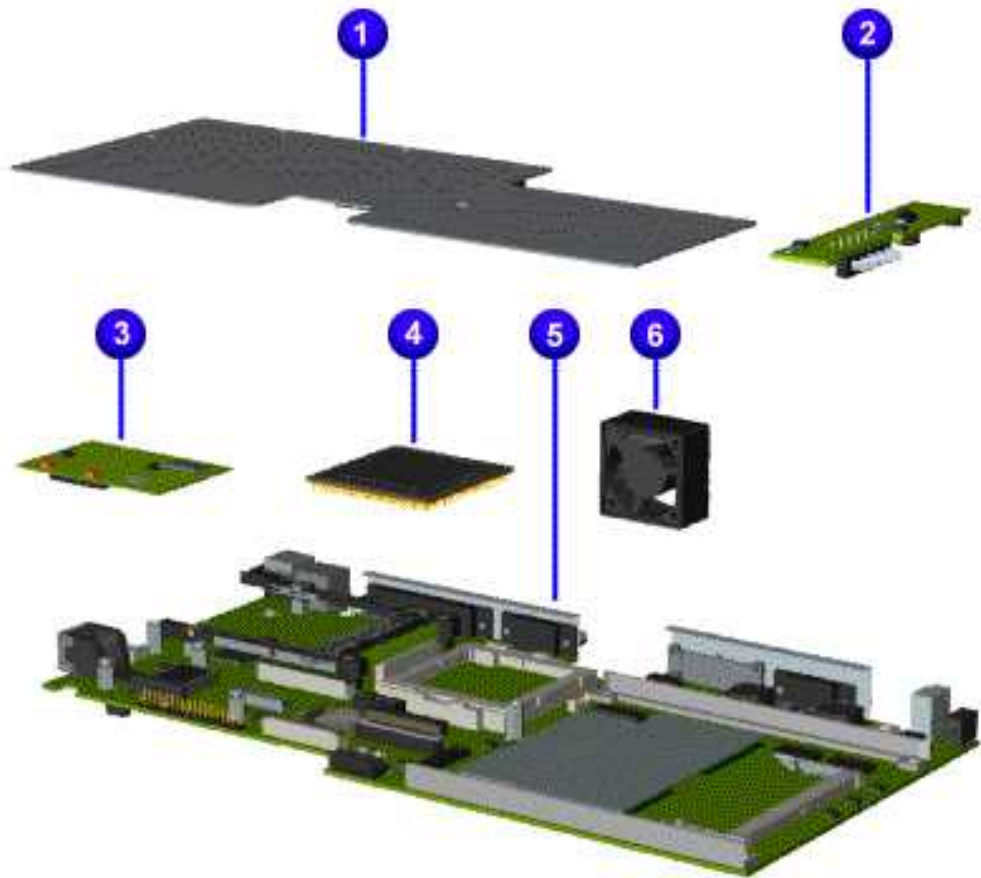
[Miscellaneous Cable Kit](#)

[Miscellaneous Hardware Kit](#)

[Miscellaneous Plastics Kit](#)

[Miscellaneous Parts](#)

[Documentation and Software](#)



Description

Spare Part Number

1. Heatspreader

158802-001

2. Voltage Converter Board	352891-001
3. Modem 56K Data/Fax w/o SRAM	400445-001
3. Modem 56K Data/Fax w/o SRAM-Intl	143848-001
4. Processor AMD K6II	
5. System Board w/512K Cache	
6. Fan Assembly	



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[STORE](#) | [PRODUCTS](#) | [SERVICES](#) | [SUPPORT](#) | [CONTACT US](#) | [SEARCH](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

| [Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Illustrated Parts Catalog

Display Assembly

[System Unit](#)

[Boards](#)

[Display Assembly](#)

[Mass Storage Devices](#)

[Miscellaneous Cable Kit](#)

[Miscellaneous Hardware Kit](#)

[Miscellaneous Plastics Kit](#)

[Miscellaneous Parts](#)

[Documentation and Software](#)



Description	Spare Part Number
Display 12.1" HPA (Models: 1246, 1247, 1278, and 1279)	158795-001
Display 13.0" HPA (Model: 1277)	158796-001

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Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Illustrated Parts Catalog

Mass Storage Devices

Use the scroll down menu for the description and spare part number.

[System Unit](#)

[Boards](#)

[Display Assembly](#)

Mass Storage Devices

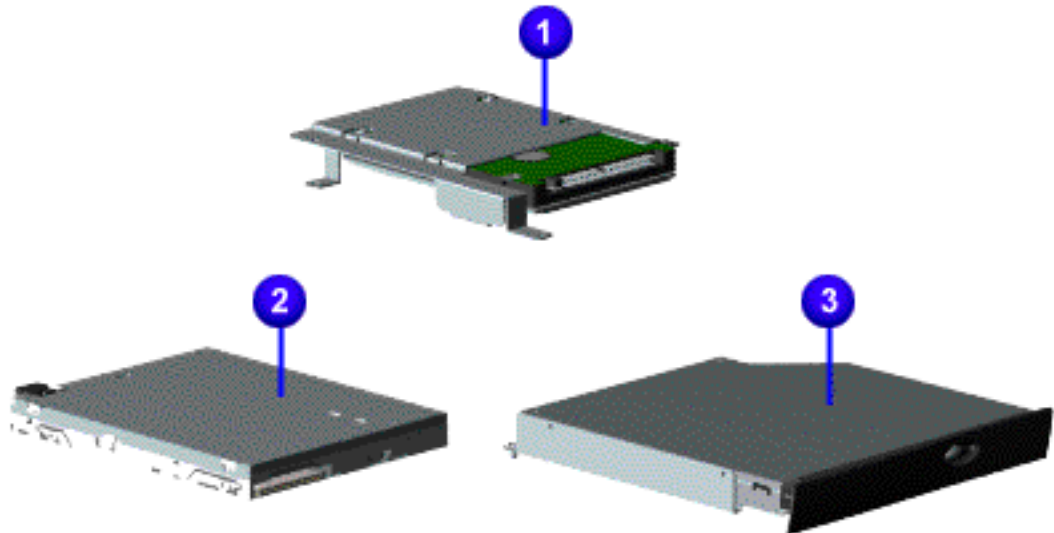
[Miscellaneous Cable Kit](#)

[Miscellaneous Hardware Kit](#)

[Miscellaneous Plastics Kit](#)

[Miscellaneous Parts](#)

[Documentation and Software](#)



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[privacy and legal statement](#)

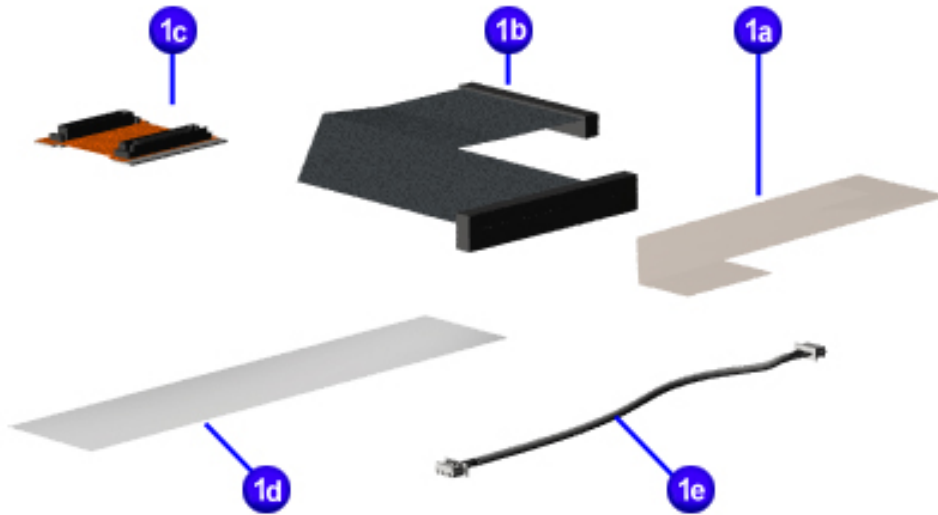
Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

| [Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Illustrated Parts Catalog

Miscellaneous Cables Kit

System Unit
Boards
Display Assembly
Mass Storage Devices
Miscellaneous Cables Kit
Miscellaneous Hardware Kit
Miscellaneous Plastics Kit
Miscellaneous Parts
Documentation and Software



Miscellaneous Cable Kit Spare Part Number: 330946-001	
1a. Diskette Drive Cable	1 each
1b. Hard Drive Cable	1 each
1c. CD Drive Cable	1 each
1d. Touchpad Cable	1 each
1e. Modem Cable	1 each

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[STORE](#) | [PRODUCTS](#) | [SERVICES](#) | [SUPPORT](#) | [CONTACT US](#) | [SEARCH](#)

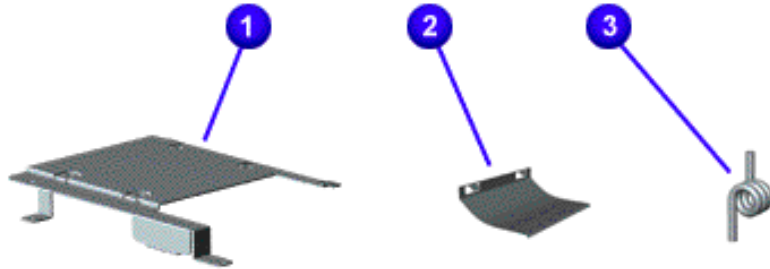
Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

| [Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Illustrated Parts Catalog

Miscellaneous Hardware Kit

System Unit
Boards
Display Assembly
Mass Storage Devices
Miscellaneous Cable Kit
Miscellaneous Hardware Kit
Miscellaneous Plastics Kit
Miscellaneous Parts
Documentation and Software



Miscellaneous Hardware Kit Spare Part Number: 346853-001	
Description	Quantity
1. Hard Drive Mounting Bracket	1 each
2. LCD Guide FPC	1 each
3. Spring Torsion PCMCIA	4 each

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[STORE](#) | [PRODUCTS](#) | [SERVICES](#) | [SUPPORT](#) | [CONTACT US](#) | [SEARCH](#)

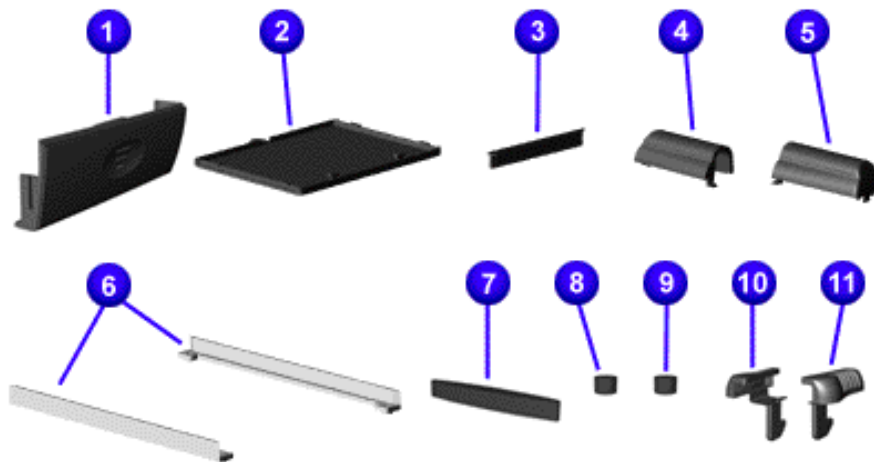
Maintenance & Service Guide Presario Series Models : 1246, 1247, 1277, 1278, and 1279

| [Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Illustrated Parts Catalog

Miscellaneous Plastics Kit

System Unit
Boards
Display Assembly
Mass Storage Devices
Miscellaneous Cable Kit
Miscellaneous Hardware Kit
Miscellaneous Plastics Kit
Miscellaneous Parts
Documentation and Software



Miscellaneous Plastics Kit Spare Part Number: 142657-001	
Description	Quantity
1. Door, Battery Pack	1 each
2. Cover, Memory Module	1 each
3. Door, PCMCIA	1 each
4. Display Hinge Cover, (Left)	1 each
5. Display Hinge Cover, (Right)	1 each
6. CD Drive Guide	1 each
7. Rubber Plug (A)	4 each
8. Rubber Plug (B)	4 each
9. Rubber Foot	8 each
10. Latch (Right)	2 each
11. Latch (Left)	2 each

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[STORE](#) | [PRODUCTS](#) | [SERVICES](#) | [SUPPORT](#) | [CONTACT US](#) | [SEARCH](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Illustrated Parts Catalog

Miscellaneous Parts

[System Unit](#)

[Boards](#)

[Display
Assembly](#)

[Mass Storage
Devices](#)

[Miscellaneous
Cable Kit](#)

[Miscellaneous
Hardware Kit](#)

[Miscellaneous
Plastics Kit](#)

[Miscellaneous
Parts](#)

[Documentation
and Software](#)

Use the scroll down menu for the description and spare part number of spare parts **Not Shown**.



Miscellaneous Parts	
1. AC Adapter	298239-001
2. Return Kit (not shown)	293799-001
3. Logo Kit (not shown)	141848-001

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[STORE](#) | [PRODUCTS](#) | [SERVICES](#) | [SUPPORT](#) | [CONTACT US](#) | [SEARCH](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

| [Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Illustrated Parts Catalog

Documentation and Software

System Unit	Description	Spare Part Number	
Boards	Quick Restore CD		
Display Assembly	Reference Guide		
Mass Storage Devices	Feature Guide		
Miscellaneous Cable Kit			
Miscellaneous Hardware Kit			
Miscellaneous Plastics Kit			
Miscellaneous Parts	QuickFind for Windows, North America, Latin America, Asia Pacific	Information Not Available	
Documentation and Software	QuickFind for Windows, Europe, Middle East, Africa	Information Not Available	
<p>*QuickFind is updated monthly. To complete the QuickFind part number, add the suffix from the table below for the desired month. If you do not specify the 3-digit suffix, the default is the current month in which the order is placed.</p>			
QuickFind Part Number Suffix			
Suffix	Month	Suffix	Month
-001	January	-007	July
-002	February	-008	August
-003	March	-009	September

-004	April	-010	October
-005	May	-011	November
-006	June	-012	December

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[privacy and legal statement](#)

COMPAQ

[STORE](#) | [PRODUCTS](#) | [SERVICES](#) | [SUPPORT](#) | [CONTACT US](#) | [SEARCH](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Removal and Replacement Procedures

Electrostatic Discharge



CAUTION: A sudden discharge of static electricity from a finger or other conductor can destroy static-sensitive devices or microcircuitry. Often the spark is neither felt nor heard, but damage occurs. An electronic device exposed to electrostatic discharge (ESD) may not be affected at all and will work perfectly throughout a normal cycle. The device may function normally for a while, then degrade in the internal layers. This reduces the device's life expectancy.

Networks built into many integrated circuits provide some protection from discharges of static electricity, but in many cases the discharge contains enough power to alter device parameters or melt silicon junctions.

Generating Static

The following table shows how different activities generate static electricity at different electrostatic voltage levels.

Typical Electrostatic Voltages

Event	Relative Humidity		
	10%	40%	55%
Walking across carpet	35,000 V	15,000 V	7,500 V
Walking across vinyl floor	12,000 V	5,000 V	3,000 V
Motions of bench worker	6,000 V	800 V	400 V
Removing DIPS from plastic tubes	2,000 V	700 V	400 V
Removing DIPS from vinyl trays	11,500 V	4,000 V	2,000 V
Removing DIPS from Styrofoam	14,500 V	5,000 V	3,500 V
Removing bubble pack from PCBs	26,000 V	20,000 V	7,000 V
Packing PCBs in foam-lined box	21,000 V	11,000 V	5,000 V

NOTE: 700 volts can degrade a product.

[*Return to Removal & Replacement Procedures*](#)

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[privacy and legal statement](#)

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[STORE](#) | [PRODUCTS](#) | [SERVICES](#) | [SUPPORT](#) | [CONTACT US](#) | [SEARCH](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Removal and Replacement Procedures

Service Considerations

Listed below are some of the considerations that you should keep in mind during the disassembly and assembly of the computer.

Tool and Software Requirements

To service the computer, you need the following:

- Compaq screwdriver kit (Spare Part No. 161946-001)
- Torx T-9 screwdriver
- 3/16-inch and 5mm nut drivers (for screwlocks and standoffs)
- Small, standard screwdriver
- Small, Phillips screwdriver
- Diagnostics software

Screws

The screws used in the computer are not interchangeable. If an incorrect screw is used during the reassembly process, it can damage the unit. Compaq strongly recommends that all screws removed during disassembly be kept with the part that was removed, then returned to their proper locations.

IMPORTANT:

As each subassembly is removed from the computer, it should be placed away from the work area to prevent damage.

Return to Removal & Replacement Procedures

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[privacy and legal statement](#)

COMPAQ

[STORE](#) | [PRODUCTS](#) | [SERVICES](#) | [SUPPORT](#) | [CONTACT US](#) |
[SEARCH](#)

Maintenance & Service Guide

Presario Series

Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Removal and Replacement Procedures

Cables and Connectors

Most cables used throughout the unit are ribbon cables. Cables must be handled with extreme care to avoid damage. Apply only the tension required to seat or unseat the cables during insertion or removal from the connector.

Cables

Use the following precautions when handling cables to prevent damage to the cable or computer:

- Always handle cables by their connectors.
- Avoid bending, twisting, or pulling on the cables.
- Apply minimum required force when seating or unseating the cables from their connectors.
- Place the cables in such a manner that they cannot be caught or snagged by parts being removed or replaced.
- Handle flex cables with extreme care; they can tear easily.



CAUTION: When servicing the computer, ensure that cables are placed in their proper location during the reassembly process. Improper cable placement can cause severe damage to the unit.

Select the desired illustration.

Removing a Cable from a [ZIF Connector](#).

The ribbon cable position for the [4.3-GB and 4.8-GB hard drive](#).

The ribbon cable position for the [CD drive](#).

The ribbon cable position for the [diskette drive](#).

The cable position for the [speaker assembly](#).

Plastic Parts

Plastic parts can be damaged by the use of excessive force during disassembly and reassembly. When handling the plastic parts, use care. Apply pressure only at the points designated in the maintenance instructions.

[*Return to Removal & Replacement Procedures*](#)

1.800.AT.COMPAQ

[privacy and legal statement](#)

Maintenance & Service Guide

Presario Series

Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Removal and Replacement Procedures

Preparing the Computer for Disassembly

Removal Sequence
Electrostatic Discharge
Service Considerations
Cables and Connectors
Preparing the Computer for Disassembly
Battery Pack
Palmrest Cover with Touch Pad
Keyboard
Heatspreader
Processor
Hard Drive

Before beginning removal and replacement procedures, complete the following procedures:

1. Disconnect AC power and any external devices.
2. Remove the battery pack.
3. Remove any PC Cards.

IMPORTANT: The battery pack should be removed before performing any internal maintenance on the computer.

[CD Drive](#)

[Battery
Charger Board](#)

[Modem](#)

[Display Panel
Assembly](#)

[Upper CPU
Cover](#)

[Speaker
Assembly](#)

[Diskette Drive](#)

[Fan Assembly](#)

[System Board](#)

[Dip Switch
Settings](#)

[Memory
Module](#)



WARNING: Metal objects can damage the battery pack as well as the battery contacts in the battery compartment. To prevent damage, do not allow metal objects to touch the battery contacts. Place only the battery pack for the Compaq Presario Series Portable Computers into the battery compartment.
Do not force the battery pack into the bay if insertion does not occur easily.



CAUTION: Do not crush, puncture, or incinerate the battery pack. Do not open a battery pack, as this damages the pack, makes it unusable, and exposes potentially harmful battery components. There are no field-serviceable parts located inside the battery pack.

NOTE:

The Compaq Presario Series Portable Computers have several screws of various sizes which are **not** interchangeable. Care must be taken during reassembly to ensure that the correct screws are used in their correct locations. During removal, please keep respective screws with their associated subassembly.

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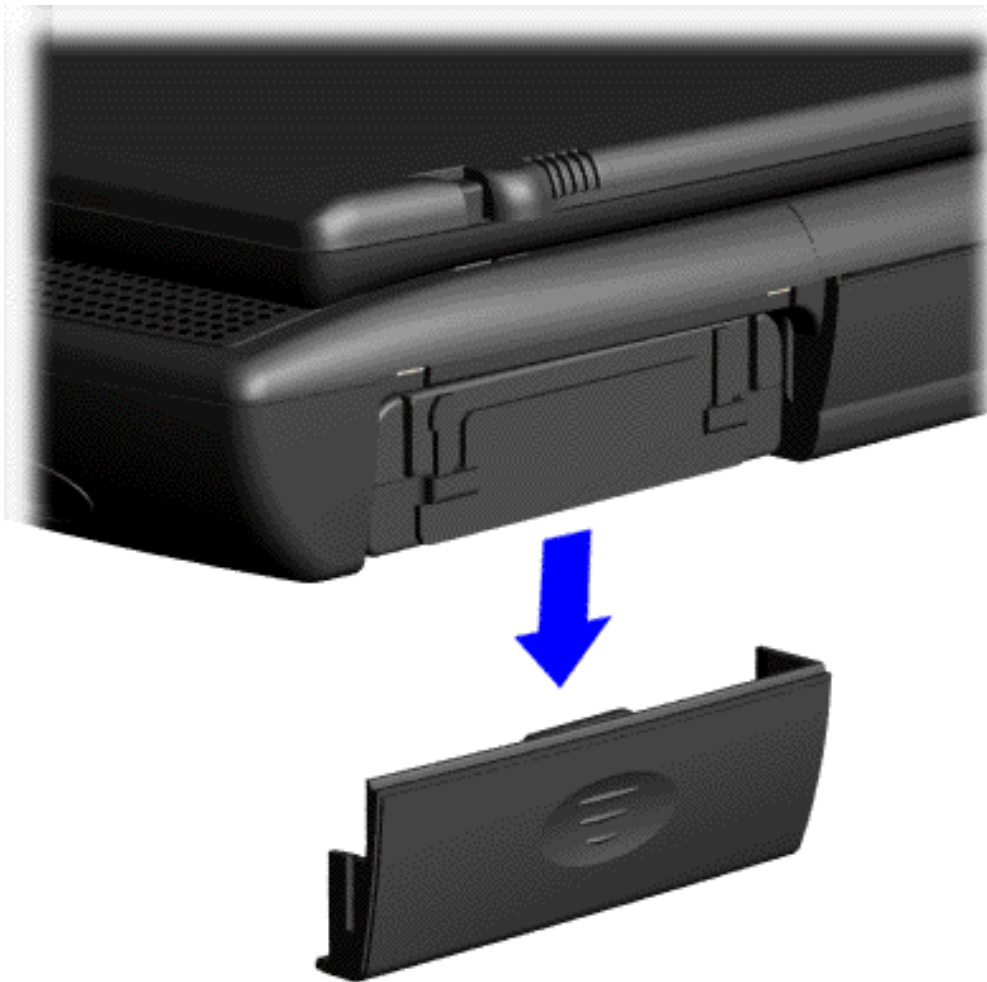
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Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Removal and Replacement Procedures

Removal Sequence
Electrostatic Discharge
Service Considerations
Cables and Connectors
Preparing the Computer for Disassembly
Battery Pack
Palmrest Cover with Touch Pad
Heatspreader
Keyboard
Processor
Hard Drive
CD Drive
Battery Charger Board



Removing the Battery Pack

To remove the battery pack, complete the following steps:

1. Slide the battery pack compartment door down and remove it from the battery pack.

Next Step

[Modem](#)

[Display Panel
Assembly](#)

[Upper CPU
Cover](#)

[Speaker
Assembly](#)

[Diskette Drive](#)

[Fan Assembly](#)

[System Board](#)

[Dip Switch
Settings](#)

[Memory
Module](#)

[1.800.AT.COMPAQ](#)

[privacy and legal statement](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

| [Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Removal and Replacement Procedures

Removal Sequence

[Electrostatic Discharge](#)

[Service Considerations](#)

[Cables and Connectors](#)

[Preparing the Computer for Disassembly](#)

[Battery Pack](#)

[Palmrest Cover with Touch Pad](#)

[Heatspreader](#)

[Keyboard](#)

[Processor](#)

[Hard Drive](#)

[CD Drive](#)

[Battery Charger Board](#)

[Modem](#)

[Display Panel Assembly](#)



Removing the Palmrest Cover with Touch Pad

The palmrest cover with touch pad must be removed to gain access to any of the interior components of the computer. It is the first component that has to be removed to gain access to the interior components.

NOTE: It is not necessary to remove the display panel assembly to access the interior components of the computer.

To remove the palmrest cover with touch pad, complete the following steps:

[Upper CPU Cover](#)

[Speaker Assembly](#)

[Diskette Drive](#)

[Fan Assembly](#)

[System Board](#)

[Dip Switch Settings](#)

[Memory Module](#)

1. [Prepare the computer for disassembly.](#)

2. Close the computer and turn the computer upside down.

3. [Remove the battery pack.](#)

4. Remove four screws from the bottom of the computer.

[Next Step](#)

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[privacy and legal statement](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications Pin Assignments](#) | [Battery Pack Operations](#)

Removal and Replacement Procedures

Removal Sequence

[Electrostatic Discharge](#)

[Service Considerations](#)

[Cables and Connectors](#)

[Preparing the Computer for Disassembly](#)

[Battery Pack](#)

[Palmrest Cover with Touch Pad](#)

[Heatspreader](#)

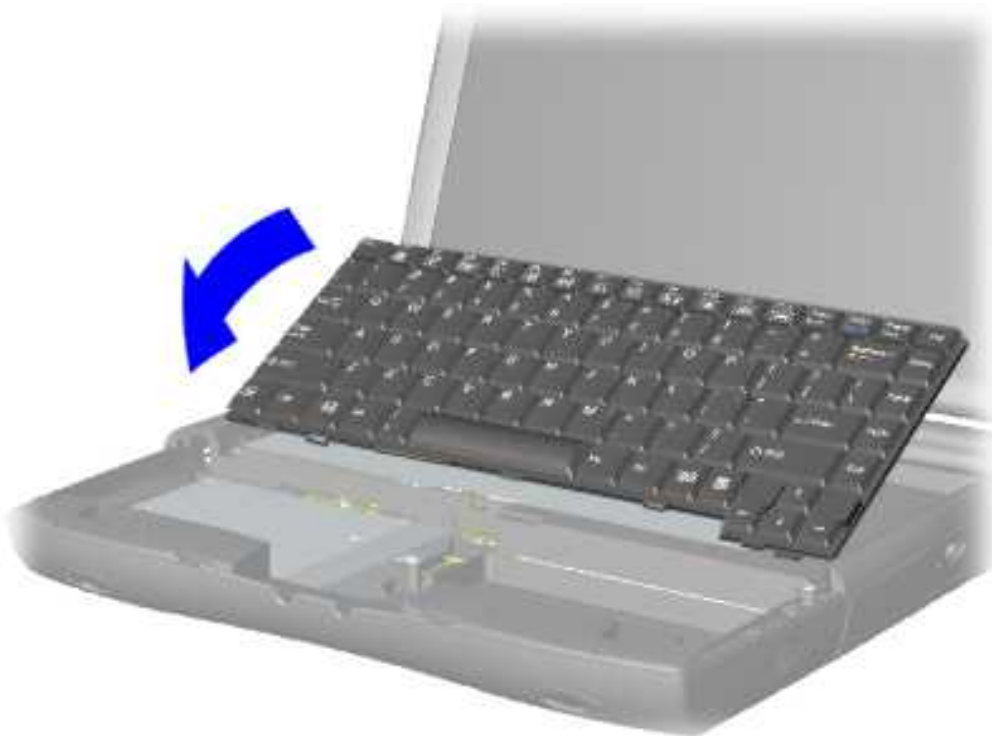
Keyboard

[Processor](#)

[Hard Drive](#)

[CD Drive](#)

[Battery Charger Board](#)



Removing the Keyboard

To remove the keyboard, complete the following steps:

1. [Prepare the computer for disassembly.](#)
2. Remove the [palmrest cover with touch pad.](#)
3. Gently lift and turn the keyboard over allowing it to rest on top of the

[Modem](#)

[Display Panel
Assembly](#)

[Upper CPU
Cover](#)

[Speaker
Assembly](#)

[Diskette Drive](#)

[Fan Assembly](#)

[System Board](#)

[Dip Switch
Settings](#)

[Memory
Module](#)

palmrest
cover with
touchpad
slot opening.

4. Remove
the
[heatspreader](#).

[Next Step](#)

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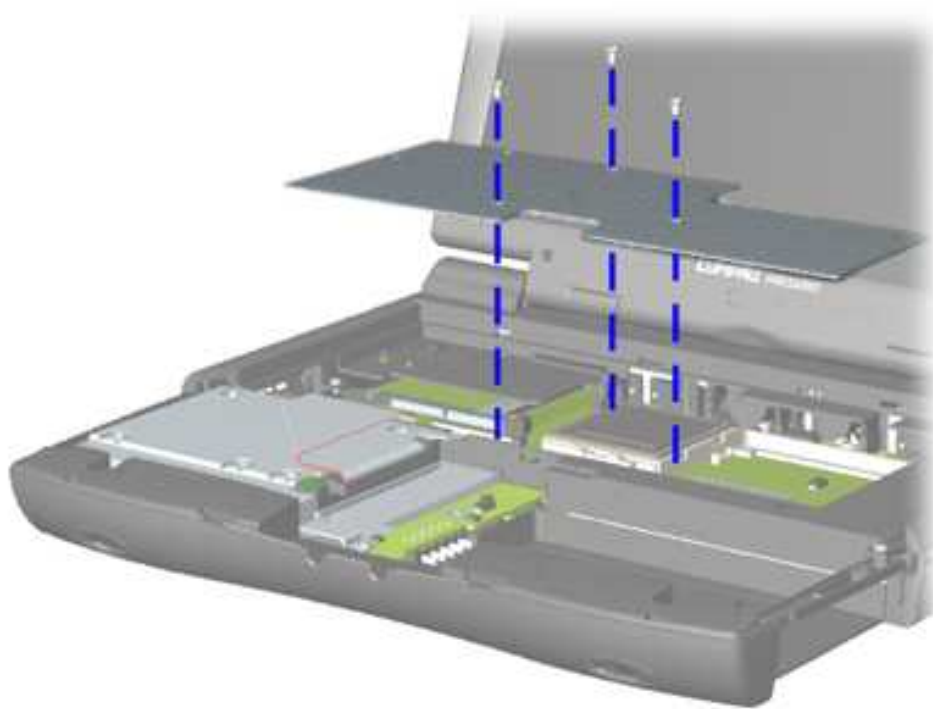
[privacy and legal statement](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

| [Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Removal and Replacement Procedures

Removal Sequence
Electrostatic Discharge
Service Considerations
Cables and Connectors
Preparing the Computer for Disassembly
Battery Pack
Palmrest Cover with Touch Pad
Heatspreader
Keyboard
Processor
Hard Drive
CD Drive
Battery Charger Board
Modem



Removing the Heatspreader

To remove the heatspreader, complete the following steps:

1. Prepare [the computer for disassembly](#).
2. Remove the [palmrest cover with touch pad](#).
3. Gently lift and turn the keyboard over, allowing it to rest on top of the [palmrest cover with touchpad](#) slot opening.

[Display Panel Assembly](#)

[Upper CPU Cover](#)

[Speaker Assembly](#)

[Diskette Drive](#)

[Fan Assembly](#)

[System Board](#)

[Dip Switch Settings](#)

[Memory Module](#)

4. Remove two screws from the heatspreader and lift it out of the chassis.

To replace the heatspreader, reverse the previous procedures.

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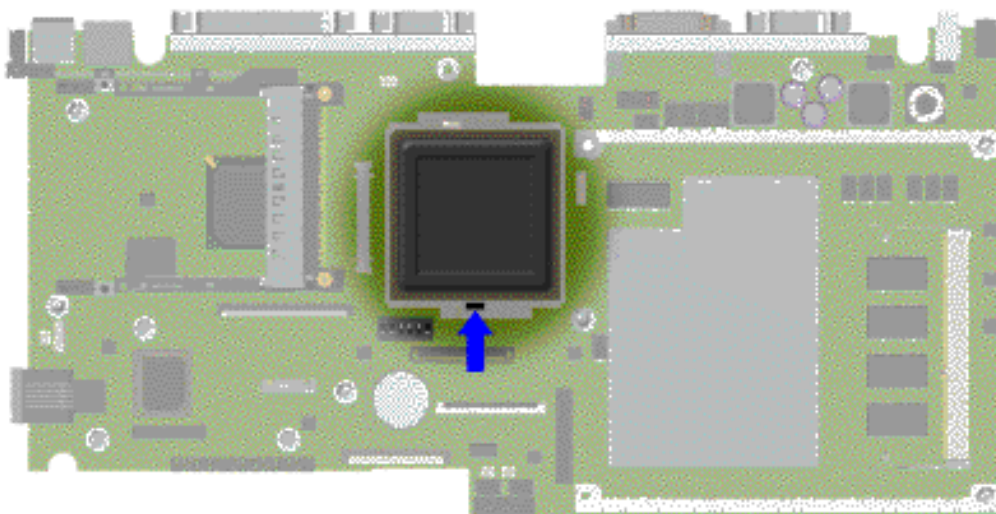
[privacy and legal statement](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications Pin Assignments](#) | [Battery Pack Operations](#)

Removal and Replacement Procedures

Removal Sequence
Electrostatic Discharge
Service Considerations
Cables and Connectors
Preparing the Computer for Disassembly
Battery Pack
Palmrest Cover with Touch Pad
Heatspreader
Keyboard
Processor
Hard Drive
CD Drive



Removing the Processor

To remove the processor, complete the following steps:

1. Prepare the [computer for disassembly](#).
2. Remove the [palmrest cover with touch pad](#).
3. Remove the [heatspreader](#).
4. Remove the [keyboard](#).
5. Insert a small blade

[Battery
Charger Board](#)

[Modem](#)

[Display Panel
Assembly](#)

[Upper CPU
Cover](#)

[Speaker
Assembly](#)

[Diskette Drive](#)

[Fan Assembly](#)

[System Board](#)

[Dip Switch
Settings](#)

[Memory
Module](#)

screw- driver
into the
bottom slot
opening on
the
processor
and push
toward the
display to
release the
processor
from the
chassis slot.

6. Lift the
processor
out of the
processor
chassis slot.

[Next Step](#)

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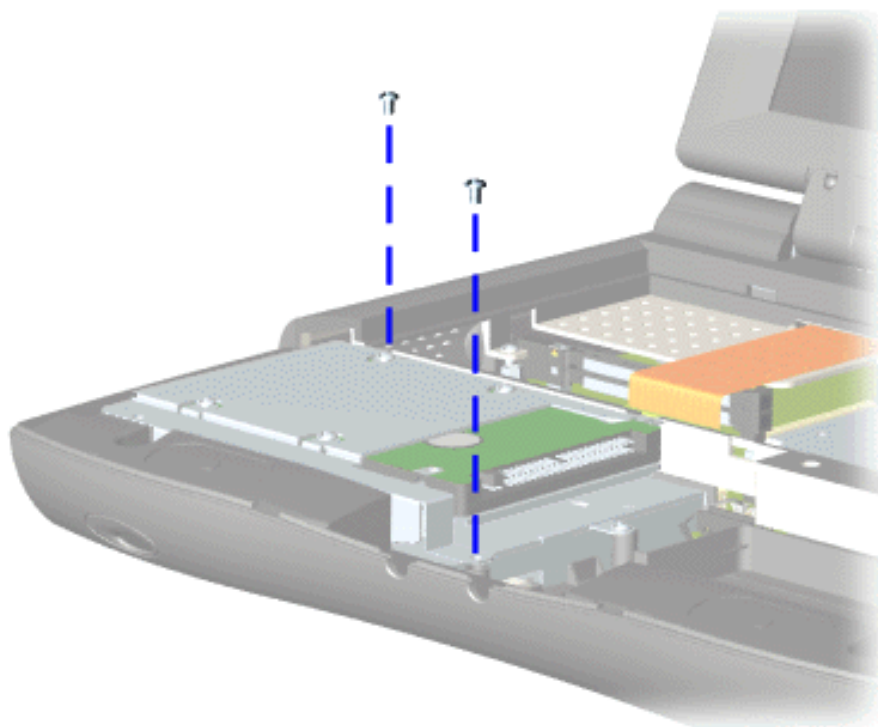
[privacy and legal statement](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications Pin Assignments](#) | [Battery Pack Operations](#)

Removal and Replacement Procedures

Removal Sequence
Electrostatic Discharge
Service Considerations
Cables and Connectors
Preparing the Computer for Disassembly
Battery Pack
Palmrest Cover with Touch Pad
Heatspreader
Keyboard
Processor
Hard Drive
CD Drive
Battery Charger Board
Modem



Removing the 4.3-GB or 4.8-GB Hard Drive

NOTE: Illustrations may show parts removed that are not part of this procedure. It is necessary to remove **only** the parts listed in the written procedure.

To remove the hard drive, complete the following steps:

1. Prepare the [computer for disassembly](#).

[Display Panel Assembly](#)

[Upper CPU Cover](#)

[Speaker Assembly](#)

[Diskette Drive](#)

[Fan Assembly](#)

[System Board](#)

[Dip Switch Settings](#)

[Memory Module](#)

2. Remove the [palmrest cover with touch pad](#).

3. Remove two screws from the hard drive mounting bracket and lift out the hard drive with drive mounting bracket attached.

[Next Step](#)

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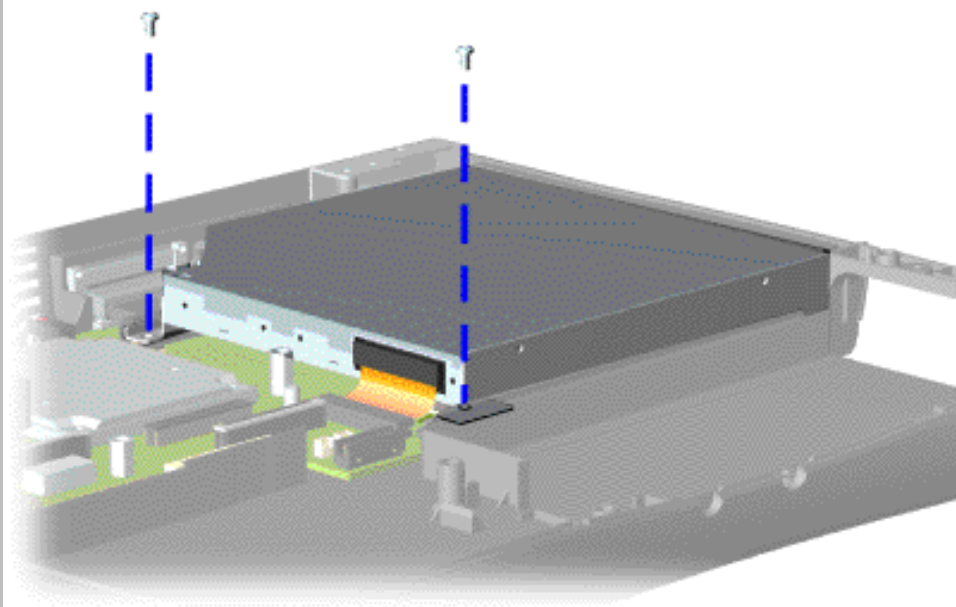
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Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Removal and Replacement Procedures

Removing the CD Drive



Illustrations may show parts removed that are not part of this procedure. For example, the illustration at left shows the CPU cover removed to better enable you to see the screw locations. It is necessary to remove **only** the parts listed in the

NOTE:

- Removal Sequence**
- [Electrostatic Discharge](#)
- [Service Considerations](#)
- [Cables and Connectors](#)
- [Preparing the Computer for Disassembly](#)
- [Battery Pack](#)
- [Palmrest Cover with Touch Pad](#)
- [Heatspreader](#)
- [Keyboard](#)
- [Processor](#)

[Hard Drive](#)

[CD Drive](#)

[Battery
Charger Board](#)

[Modem](#)

[Display Panel
Assembly](#)

[Upper CPU
Cover](#)

[Speaker
Assembly](#)


[Diskette Drive](#)

[Fan Assembly](#)

[System Board](#)

[Dip Switch
Settings](#)

[Memory
Module](#)

 written procedure.

To remove the CD drive, complete the following steps:

1. Prepare the [computer for disassembly](#).
2. Remove the [palmrest cover with touch pad](#).
3. Remove the [heatspreader](#).
4. Remove the [keyboard](#).
5. Remove two screws located at the back of the CD drive.

[Next Step](#)

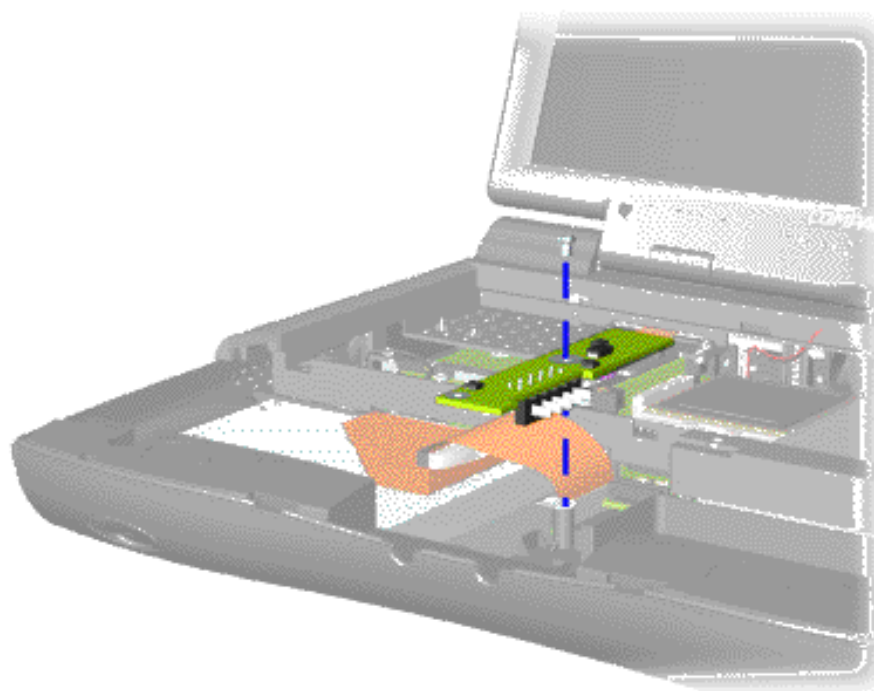
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Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Removal and Replacement Procedures



Removing the Battery Charger Board

NOTE:

Illustrations may show parts removed that are not part of this procedure. It is necessary to remove **only** the parts listed in the written procedure.

To remove the battery charger board, complete the following steps:

1. Prepare the [computer for disassembly](#).

Removal Sequence

[Electrostatic Discharge](#)

[Service Considerations](#)

[Cables and Connectors](#)

[Preparing the Computer for Disassembly](#)

[Battery Pack](#)

[Palmrest Cover with Touch Pad](#)

[Heatspreader](#)

Keyboard
Processor
Hard Drive
CD Drive
Battery Charger Board
Modem
Display Panel Assembly
Upper CPU Cover
Speaker Assembly
Diskette Drive
Fan Assembly
System Board
Dip Switch Settings
Memory Module

2. Remove the [palmrest cover with touch pad](#).

3. Remove the [hard drive](#).

4. Remove one screw from the battery charger board, unplug the board from the connector on the system board, and lift it out of the chassis.

To replace the battery charger board, reverse the previous procedures.

NOTE:

When replacing the battery charger board, ensure that the pins are aligned with the connector on the system board.

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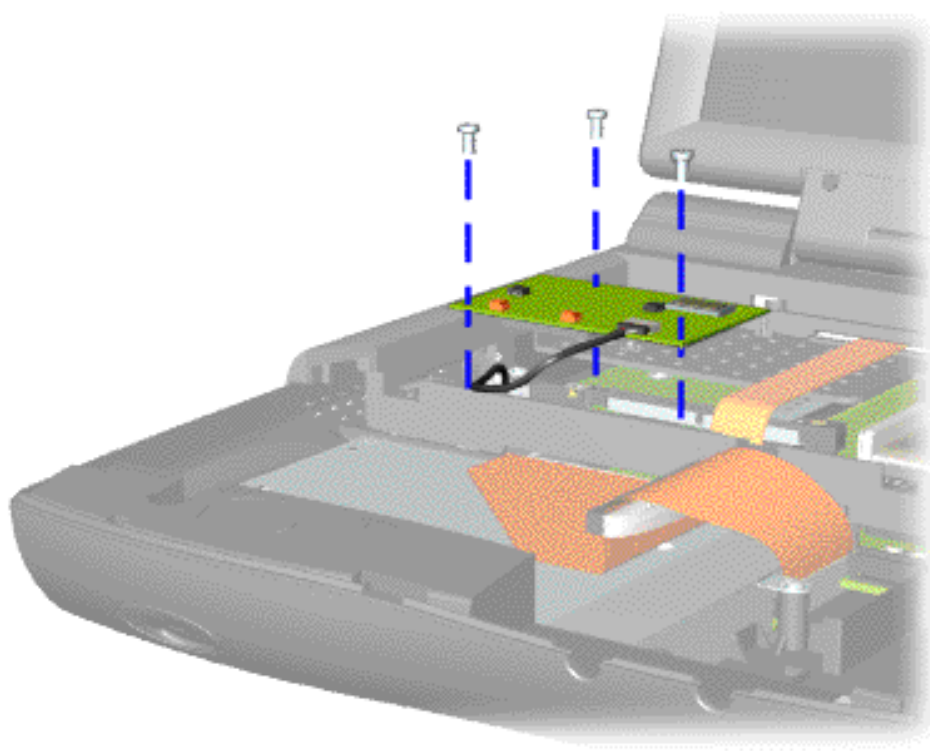
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Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications Pin Assignments](#) | [Battery Pack Operations](#)

Removal and Replacement Procedures

Removal Sequence
Electrostatic Discharge
Service Considerations
Cables and Connectors
Preparing the Computer for Disassembly
Battery Pack
Palmrest Cover with Touch Pad
Heatspreader
Keyboard
Processor
Hard Drive
CD Drive
Battery Charger Board
Modem



Removing the Modem

To remove the modem, complete the following steps:

1. Prepare the [computer for disassembly](#).
2. Remove the [palmrest cover with touch pad](#).
3. Remove the [heatspreader](#).
4. Remove the [keyboard](#).
5. Remove three screws

Display Panel Assembly
Upper CPU Cover
Speaker Assembly
Diskette Drive
Fan Assembly
System Board
Dip Switch Settings
Memory Module

securing the modem, and pull the modem off the connector on the system board.

[Next Step](#)

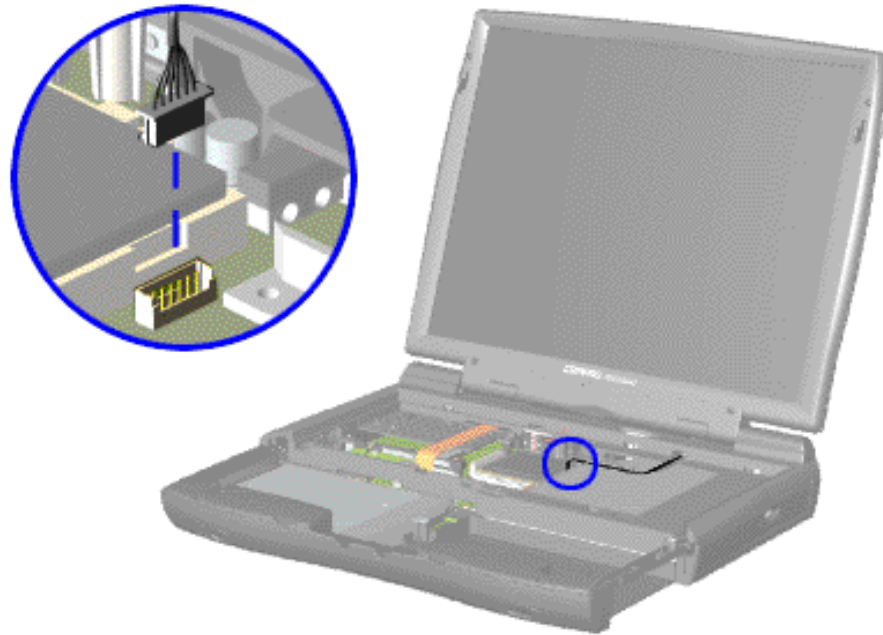
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Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Removal and Replacement Procedures



Removing the Display Panel Assembly

NOTE: Illustrations may show parts removed that are not part of this procedure. It is necessary to remove **only** the parts listed in the written procedure.

To remove the display panel assembly, complete the following steps:

1. Prepare the [computer for disassembly](#).

Removal Sequence

[Electrostatic Discharge](#)

[Service Considerations](#)

[Cables and Connectors](#)

[Preparing the Computer for Disassembly](#)

[Battery Pack](#)

[Palmrest Cover with Touch Pad](#)

[Heatspreader](#)

[Keyboard](#)

[Processor](#)

[Hard Drive](#)

[CD Drive](#)

[Battery Charger Board](#)

[Modem](#)

Display Panel Assembly
Upper CPU Cover
Speaker Assembly
Diskette Drive
Fan Assembly
System Board
Dip Switch Settings
Memory Module

2. Remove the [palmrest cover with touch pad](#).

3. Remove the [heatspreader](#).

4. Remove the [keyboard](#).

5. Disconnect the backlight cable attached to the display panel assembly from the connector on the system board.

[Next Step](#)

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Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Removal and Replacement Procedures

Removal Sequence

[Electrostatic Discharge](#)

[Service Considerations](#)

[Cables and Connectors](#)

[Preparing the Computer for Disassembly](#)

[Battery Pack](#)

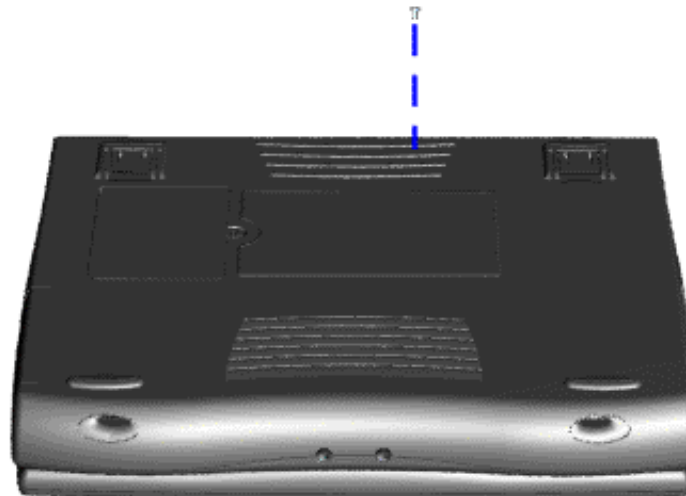
[Palmrest Cover with Touch Pad](#)

[Heatspreader](#)

[Keyboard](#)

[Processor](#)

[Hard Drive](#)



Removing the Upper CPU Cover

To remove the Upper CPU cover, complete the following steps:

1. Prepare the [computer for disassembly](#).
2. Remove the [palmrest cover with touch pad](#).
3. Remove the [heatspreader](#).
4. Remove the [keyboard](#).

[CD Drive](#)

[Battery
Charger Board](#)

[Modem](#)

[Display Panel
Assembly](#)

**Upper CPU
Cover**

[Speaker
Assembly](#)

[Diskette Drive](#)

[Fan Assembly](#)

[System Board](#)

[Dip Switch
Settings](#)

[Memory
Module](#)

5. Remove the [hard drive](#).

6. Remove the [display panel assembly](#).

7. Remove the screw located under the bottom of the unit (rear) which secures the Upper CPU cover to the chassis.

[Next Step](#)

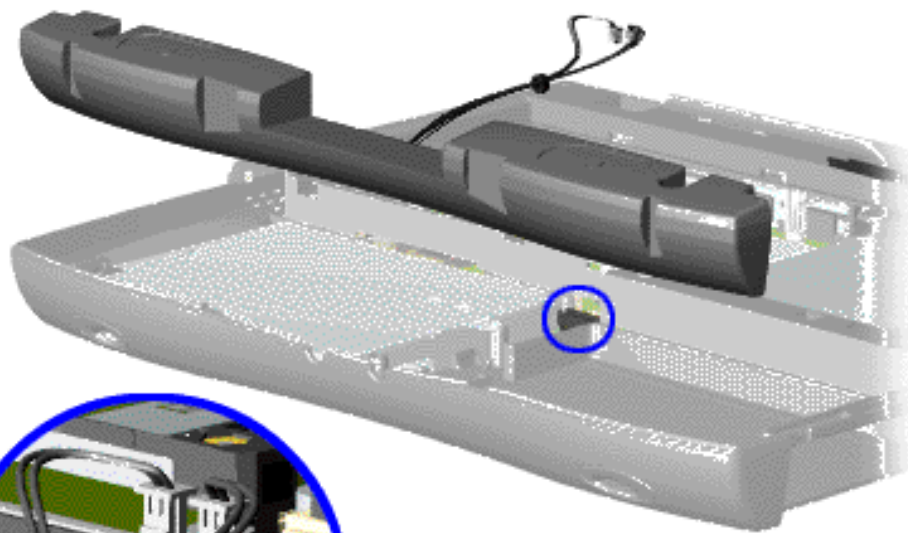
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[privacy and legal statement](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications Pin Assignments](#) | [Battery Pack Operations](#)

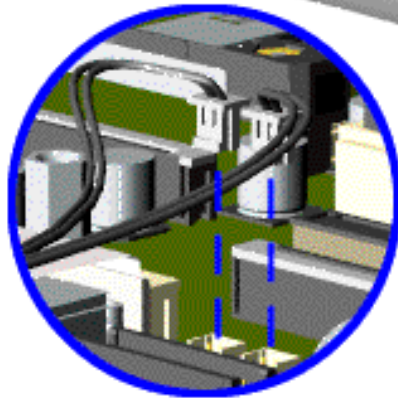
Removal and Replacement Procedures



Removing the Speaker Assembly

To remove the speaker assembly, complete the following steps:

1. Prepare the [computer for disassembly](#).
2. Remove the [palmrest cover with touch pad](#).
3. Remove the [heatspreader](#).



Removal Sequence

[Electrostatic Discharge](#)

[Service Considerations](#)

[Cables and Connectors](#)

[Preparing the Computer for Disassembly](#)

[Battery Pack](#)

Palmrest Cover with Touch Pad
Heatspreader
Keyboard
Processor
Hard Drive
CD Drive
Battery Charger Board
Modem
Display Panel Assembly
Upper CPU Cover
Speaker Assembly
Diskette Drive
Fan Assembly
System Board
Dip Switch Settings
Memory Module

4. Remove the [keyboard](#).

5. Remove the [hard drive](#).

6. Remove the [display panel assembly](#).

7. Remove the [Upper CPU cover](#).

8. Remove the [charger board](#).

9. Disconnect the speaker cables from the [system board](#) and remove the speaker assembly from the chassis.

To replace the speaker assembly, reverse the previous procedures.

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[privacy and legal statement](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

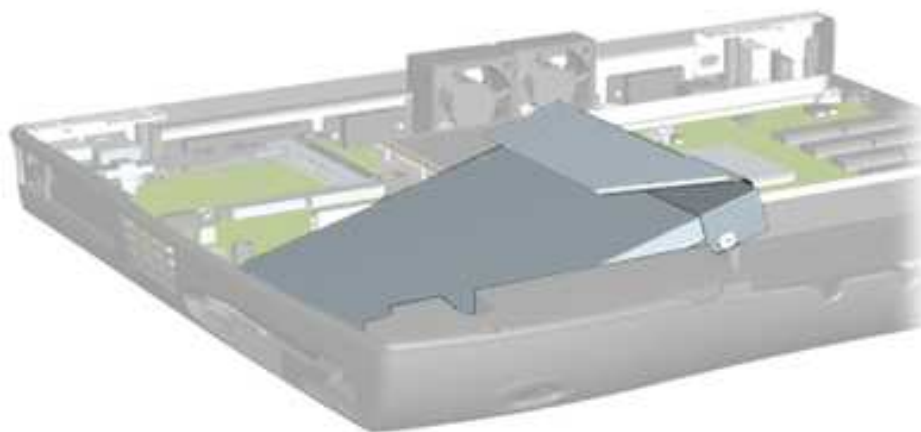
[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications Pin Assignments](#) | [Battery Pack Operations](#)

Removal and Replacement Procedures

Removing the Diskette Drive

To remove the diskette drive, complete the following steps:

1. [Prepare the computer for disassembly.](#)
2. Remove the [palmrest cover with touch pad.](#)
3. Remove the [heatspreader.](#)
4. Remove the [keyboard.](#)
5. Remove the [hard drive.](#)
6. Remove the [display panel assembly.](#)
7. Remove the



Removal Sequence

[Electrostatic Discharge](#)

[Service Considerations](#)

[Cables and Connectors](#)

[Preparing the Computer for Disassembly](#)

[Battery Pack](#)

[Palmrest Cover with Touch Pad](#)

[Keyboard](#)

[Heatspreader](#)

[Processor](#)

[Hard Drive](#)

[CD Drive](#)

[Battery Charger Board](#)

[Modem](#)

[Display Panel Assembly](#)

[Upper CPU Cover](#)

[Speaker Assembly](#)

Diskette Drive

[Fan Assembly](#)

[System Board](#)

[Dip Switch Settings](#)

[Memory Module](#)

[upper CPU cover](#).

8. Remove the [battery charger board](#).

9. Remove the [speaker assembly](#).

10. Lift up the diskette drive.

11. Disconnect the diskette drive data cable from the system board.

To replace the diskette drive, reverse the previous procedures.

NOTE:

When replacing the diskette drive, ensure that the diskette drive eject lever is properly inserted in the chassis slot.

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Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

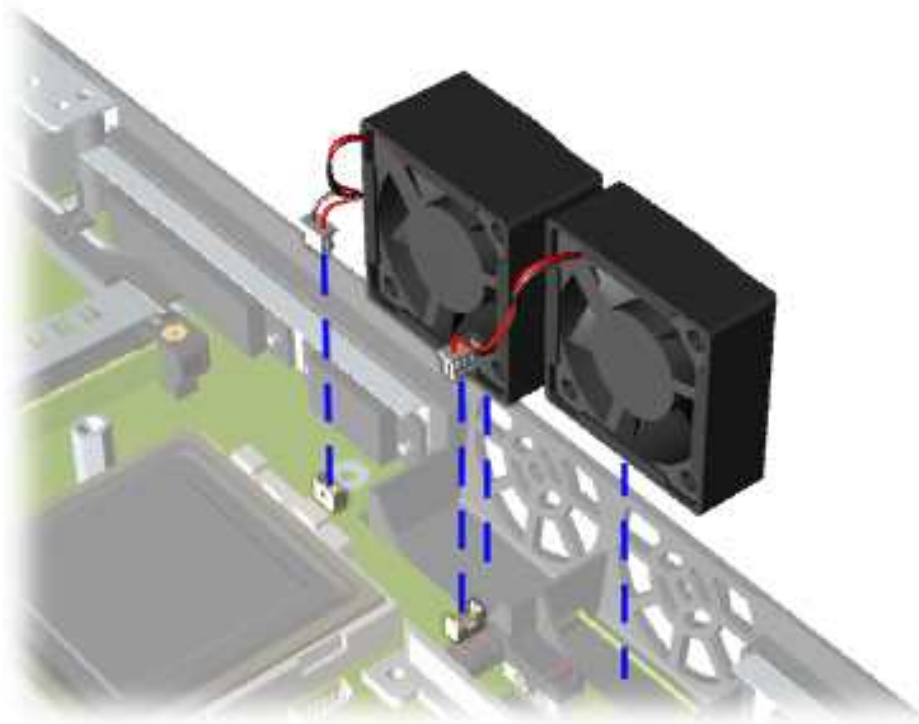
[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Removal and Replacement Procedures

Removing the Fan Assembly

To remove either of the fan assemblies, complete the following steps:

1. Prepare the [computer for disassembly](#).
2. Remove the [palmrest cover with touch pad](#).
3. Remove the [heatspreader](#).
4. Remove



Removal Sequence

[Electrostatic Discharge](#)

[Service Considerations](#)

[Cables and Connectors](#)

[Preparing the Computer for Disassembly](#)

[Battery Pack](#)

[Palmrest Cover with Touch Pad](#)

[Keyboard](#)

[Heatspreader](#)

[Processor](#)

[Hard Drive](#)

[CD Drive](#)

[Battery](#)

[Charger Board](#)

[Modem](#)

[Display Panel
Assembly](#)

[Upper CPU
Cover](#)

[Speaker
Assembly](#)

[Diskette Drive](#)

[Fan Assembly](#)

[System Board](#)

[Dip Switch
Settings](#)

[Memory
Module](#)

the [keyboard](#).

5. Remove the [display panel assembly](#).

6. Remove the [hard drive](#).

7. Remove the [Upper CPU cover](#).

8. Lift the fan assembly from the chassis slot and disconnect the fan cable from the connector on the system board.

[Next Step](#)

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[privacy and legal statement](#)

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Maintenance & Service Guide

Presario Series

Models: 1246, 1247, 1277, 1278, and 1279

- [Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Removal and Replacement Procedures

Removing the System Board

Removal Sequence
Electrostatic Discharge
Service Considerations
Cables and Connectors
Preparing the Computer for Disassembly
Battery Pack
Palmrest Cover with Touch Pad
Keyboard
Heatspreader
Processor
Hard Drive

To remove the system board, complete the following steps:

1. Prepare the [computer for disassembly](#).
2. Remove the [palmrest cover with touch pad](#).
3. Remove the [heatspreader](#).
4. Remove the [keyboard](#).
5. Remove the [processor](#).
6. Remove the [modem](#).
7. Remove the [hard drive](#).
8. Remove the [display panel assembly](#).
9. Remove the [Upper CPU Cover](#).
10. Remove the [battery charger board](#).

[CD Drive](#)

[Battery
Charger Board](#)

[Modem](#)

[Display Panel
Assembly](#)

[Upper CPU
Cover](#)

[Speaker
Assembly](#)

[Diskette Drive](#)

[Fan Assembly](#)

System Board

[Dip Switch
Settings](#)

[Memory Module](#)

11. Remove the [CD drive](#).

12. Remove the [fan assembly](#).

IMPORTANT:

When replacing the system board, remove the memory module on the system board.

13. Disconnect the data cable and the [speaker assembly](#) cables.

[Next Step](#)

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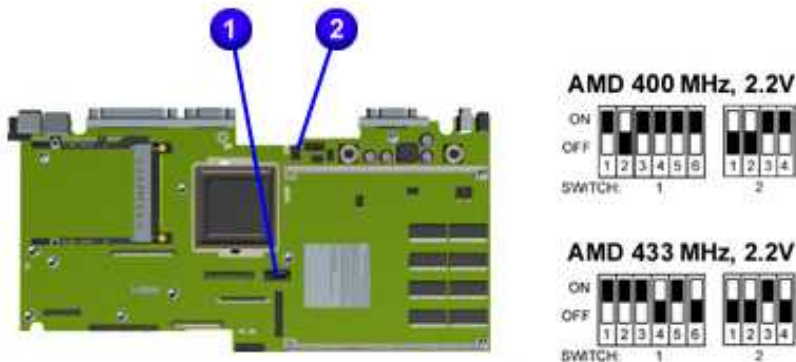
[privacy and legal statement](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

| [Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)



CAUTION: Only change settings 1-5 on SW1 **1**. Other settings vary by model and should not be changed when replacing the system board. Ensure the dip switch voltage settings (SW1 1 and SW2 2) on the system board are correct for the computer model and processor voltage marked on the processor chip. If the system board dip switch voltage settings are not correct, damage may occur to the computer and/or system board.



NOTE: The black area on the dip switch indicates the position of the switch.

[Return to Removal & Replacement Procedures](#)

Maintenance & Service Guide Presario Series Models: 1246, 1247, 1277, 1278, and 1279

[Home Page](#) | [Notice](#) | [Preface](#) | [Product Description](#) | [Troubleshooting](#)
[Illustrated Parts Catalog](#) | [Removal & Replacement Procedures](#) | [Specifications](#)
[Pin Assignments](#) | [Battery Pack Operations](#)

Removal and Replacement Procedures

Removal Sequence

[Electrostatic Discharge](#)

[Service Considerations](#)

[Cables and Connectors](#)

[Preparing the Computer for Disassembly](#)

[Battery Pack](#)

[Palmrest Cover with Touch Pad](#)

[Keyboard](#)

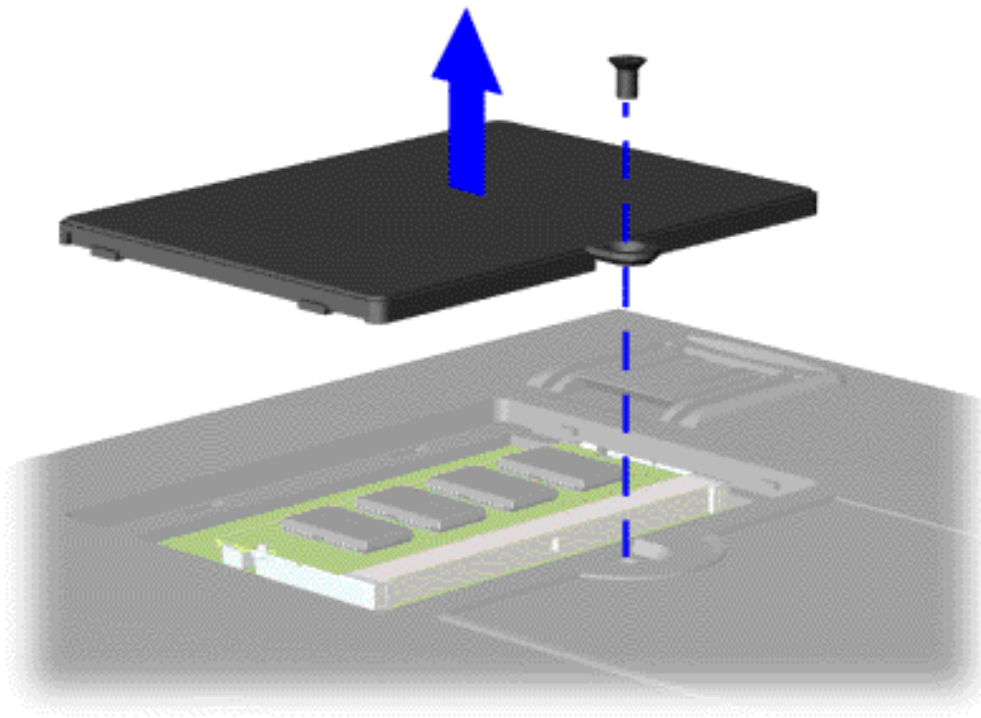
[Heatspreader](#)

[Processor](#)

[Hard Drive](#)

[CD Drive](#)

[Battery Charger Board](#)



Removing the Memory Module

To remove the memory module, complete the following steps:

1. Prepare the [computer for disassembly](#).
2. Close the computer and turn the computer upside down.

Modem
Display Panel Assembly
Upper CPU Cover
Speaker Assembly
Diskette Drive
Fan Assembly
System Board
Dip Switch Settings
Memory Module

3. Remove the screw from the memory module door, and slide the memory module door to the right.

[***Next Step***](#)

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